Computer Physics Communications

An international journal and program library for computational physics and physical chemistry

VOLUMES 51–60

VOLUMES 1–60

Recognized by the European Physical Society

NORTH-HOLLAND

COMPUTER PHYSICS COMMUNICATIONS

An international journal and program library for computational physics and physical chemistry

Subscriptions

6 volumes (18 issues) of Computer Physics Communications have been announced for 1992. The subscription price for these volumes is Dfl.2970.00 (US $1623.00). Postage and handling amount to Dfl.186.00 (US $101.50). Therefore the total price is Dfl.3156.00 (US $1724.50). The Dutch Guilder prices are definitive; dollar prices are for guidance only.
Subscriptions should be sent to the publisher, Elsevier Science Publishers B.V., Journals Department, P.O. Box 211, 1000 AE Amsterdam, or to any subscription agent.
Journals are sent by surface delivery to all countries, except the following countries where SAL air delivery (Surface Airlifted Mail) is ensured: USA, Canada, Japan, Australia, New Zealand, The People's Republic of China, Israel, India, Brazil, Malaysia, Singapore, South Korea, Taiwan, Pakistan, Hong Kong, South Africa. Air mail rates for other countries are available upon request.
The publisher expects to supply missing numbers free only when losses have been sustained in transit, when the reserve stock will permit, and when claims have been made within three months following the date of publication.

Published monthly **Printed in The Netherlands**

COMPUTER PHYSICS COMMUNICATIONS

Computer Physics Communications

Master Index Volumes 51–60

Program Index Volumes 1–60

Recognized by the European Physical Society

NORTH-HOLLAND

This volume is printed on acid-free paper.

Printed in The Netherlands

Computer Physics Communications
North-Holland

Computer Physics Communications – List of Editors

C.B. LANG
Institut für Theoretische Physik, Universitätsplatz 5, Universität Graz, A-8010 Graz, Austria

J. LINNEMANN
Department of Physics, Michigan State University, East Lansing, MI 48824-1116, USA

T. NASH
FNAL, P.O. Box 500, Batavia, IL 60510, USA

C. REBBI
Physics Department, 590 Commonwealth Avenue, Boston, MA 02215, USA

H. YOSHIKI
National Laboratory for High Energy Physics, Oho-Machi, Tsukuba-Gun, Ibaraki 300-32, Japan

Nuclear physics

B.S. NILSSON
Niels Bohr Institute, Blegdamsvej 17, DK-2100 Copenhagen Ø, Denmark

Plasma physics

M. ASHOUR-ABDALLA
Institute of Geophysics and Planetary Physics, University of California, Los Angeles, CA 90024, USA

D.C. BARNES
Los Alamos National Laboratory, Los Alamos, NM 87545, USA

D.W. HEWETT
Lawrence Livermore National Laboratory, P.O. Box 808, Livermore, CA 94550, USA

Statistical mechanics and many body physics

K. BINDER
Institut für Physik, Johannes-Gutenberg-Universität Mainz, Postfach 3980, W-6500 Mainz 1, Germany

M. PARRINELLO
IBM Research Division, Zürich Research Laboratory, CH-8803 Rüschlikon, Switzerland

Statistics and data analysis

F. JAMES
CERN, Data Handling Division, CH-1211 Geneva 23, Switzerland

J. LINNEMANN
Department of Physics, Michigan State University, East Lansing, MI 48824-1116, USA

Contents

Subject index of computational physics papers to volumes 51–60 3

Author index to volumes 51–60 25

Program index to volumes 1–60 57

Subject index of computational physics papers to volumes 51–60

1. Astronomy and astrophysics

1.6. Solar physics

Schnack, D.D., Z. Mikić, D.C. Barnes and G. van Hoven, Magnetohydrodynamic simulation of coronal magnetic fields 59 (1990) 21
Goedbloed, J.P., Stability of solar coronal loops 59 (1990) 39
de Bruyne, P., M. Velli and A.W. Hood, The ideal MHD stability of line-tied coronal loops: a truncated Fourier series approach 59 (1990) 55
van der Linden, R.A.M., M. Goossens and W. Kerner, A combined finite element/ Fourier series method for the numerical study of the stability of line-tied magnetic plasmas 59 (1990) 61
Poedts, S., M. Goossens and W. Kerner, Numerical simulation of the stationary state of periodically driven coronal loops 59 (1990) 75
Poedts, S., M. Goossens and W. Kerner, Temporal evolution of resonant absorption in solar coronal loops 59 (1990) 95
Lin, Y., Numerical calculation of force-free magnetic field for solar active regions and its application to prediction of solar flares 59 (1990) 139
Velli, M., R. Grappin and A. Mangeney, Solar wind expansion effects on the evolution of hydromagnetic turbulence in the interplanetary medium 59 (1990) 153
Reale, F., F. Brugè, G. Peres, S.L. Fornili, V. Martorana and S. Serio, One-dimensional hydrodynamic modeling of coronal plasmas on transputer arrays 60 (1990) 201

1.7. Stars and stellar systems

Toomre, J., N. Brummell, F. Cattaneo and N.E. Hurlburt, Three-dimensional compressible convection at low Prandtl numbers 59 (1990) 105
Nordlund, Å. and R.F. Stein, 3-D simulations of solar and stellar convection and magnetoconvection 59 (1990) 119
Hermans, D., W. Kerner and M. Goossens, Linearly overstable magnetic convection in 1D compressible and non-uniform plasmas 59 (1990) 127
Ito, T., J. Makino, T. Ebisuzaki and D. Sugimoto, A special-purpose N-body machine GRAPE-1 60 (1990) 187

2. Atomic physics

2.1. Structure and properties

Hibbert, A., C. Froese Fischer and M.R. Godefroid, Non-orthogonal orbitals in MCHF or configuration interaction wave functions 51 (1988) 285
Moncrieff, D., D.J. Baker and S. Wilson, Diagrammatic many-body perturbation expansion for atoms and molecules. VI 55 (1989) 31

Atomic physics — *Structure and properties (continued)*

Wilson, S., Universal basis sets and Cholesky decomposition of the two-electron integral matrix 58 (1990) 71

2.2. Spectra
Fernandez, J.E., Monte Carlo computer simulation of the XRF intensity dependence on the propagation plane inclination 54 (1989) 211
Janicki, C., A computer program for the free–free and bound–free Gaunt factors of Rydberg systems 60 (1990) 281

2.4. Electron scattering
Lan, V.K., M. Le Dourneuf, N.F. Allard, H.E. Saraph and W. Eissner, On the comparisons of close-coupling calculatons using the UCL and opacity codes 55 (1989) 303

2.5. Photon interactions
Fernandez, J.E., Monte Carlo computer simulation of the XRF intensity dependence on the propagation plane inclination 54 (1989) 211

2.6. Other collision processes
Hansen, J.P. and K. Taulbjerg, A preorthonormalization procedure for coupled channel problems 51 (1988) 317

2.7. Wave functions and integrals
Hibbert, A., C. Froese Fischer and M.R. Godefroid, Non-orthogonal orbitals in MCHF or configuration interaction wave functions 51 (1988) 285
Nesbet, R.K., Analytical evaluation of integrals over Coulomb wave functions 52 (1988/1989) 29

2.9. Theoretical methods
Vinette, F. and J. Čížek, Perturbation energy expansion using hypervirial theorem and symbolic computation for the N-dimensional hydrogen atom in an external spherically symmetric field 52 (1988/1989) 35

4. Computational methods

4.2. Other algebras and groups
Gausterer, H. and S. Sanielevici, Remarks on the numerical solution of Langevin equations on unitary group spaces 52 (1988/1989) 43

4.3. Differential equations
Young, D.M., A historical overview of iterative methods 53 (1989) 1
Nour-Omid, B., Applications of the Lanczos method 53 (1989) 157
Keyes, D.E., Domain decomposition methods for the parallel computation of reacting flows 53 (1989) 181
Bank, R.E., W.M. Coughran Jr., M.A. Driscoll, R.K. Smith and W. Fichtner, Iterative methods in semiconductor device simulation 53 (1989) 201
Lewis, J.G. and D.J. Pierce, Recent research in iterative methods at Boeing 53 (1989) 213
van der Vorst, H.A., ICCG and related methods for 3D problems on vector computers 53 (1989) 223

Computational methods — *Differential equations (continued)*

Chan, T.F., C-C.J. Kuo and C. Tong, Parallel elliptic preconditioners: Fourier analysis and performance on the connection machine 53 (1989) 237
Greenbaum, A., C. Li and H.Z. Chao, Parallelizing preconditioned conjugate gradient algorithms 53 (1989) 295
Kelkar, K. M. and S.V. Patankar, Development of generalized block correction procedures for the solution of descretized Navier–Stokes equations 53 (1989) 329
Foresti, S., G. Brussino, S. Hassanzadeh and V. Sonnad, Multilevel solution method for the p-version of finite elements 53 (1989) 349
Duneczky, C., R.E. Wyatt, D. Chatfield, K. Haug, D.W. Schwenke, D.G. Truhlar, Y. Sun and D.J. Kouri, Iterative methods for solving the nonsparse equations of quantum mechanical reactive scattering 53 (1989) 357
Schneider, B.I. and L.A. Collins, A direct iterative–variational method for solving large sets of linear algebraic equations 53 (1989) 381
Fortin, M., Some iterative methods for incompressible flow problems 53 (1989) 393
Dean, E., R. Glowinski and C.H. Li, Supercomputer solutions of partial differential equation problems in computational fluid dynamics and in control 53 (1989) 401
Tezduyar, T.E. and J. Liou, Grouped element-by-element iteration schemes for incompressible flow computations 53 (1989) 441
Cohen, R., S.-Y. Lin and M. Luskin, Relaxation and gradient methods for molecular orientation in liquid crystals 53 (1989) 455
Meurant, G., Practical use of the conjugate gradient method on parallel supercomputers 53 (1989) 467
Friedman, R.S. and M.J. Jamieson, Model potentials for multichannel eigenvalue problems 55 (1989) 137
Marshall, G., Monte Carlo methods for the solution of nonlinear partial differential equations 56 (1989/1990) 51
Thyagaraja, A. and D.F. Fletcher, The nonhyperbolicity of multiphase flow equations: a nonlinear nonproblem? 56 (1989/1990) 115
Friedman, R.S., M.J. Jamieson and S.C. Preston, On the numerical solution of coupled eigenvalue differential equations arising in molecular spectroscopy 58 (1990) 17
Weniger, E.J. and J. Cížek, Rational approximations for the modified Bessel function of the second kind 59 (1990) 471
Fontenelle, M.T. and J.A.C. Gallas, Constants of motion for the KdV and mKdV equations 60 (1990) 225

4.4. Feynman diagrams

Küblbeck, J., M. Böhm and A. Denner, Feyn Arts – Computer-algebraic generation of Feynman graphs and amplitudes 60 (1990) 165

4.5. Coulomb functions

Nesbet, R.K., Analytical evaluation of integrals over Coulomb wave functions 52 (1988/1989) 29
Pollock, E.L., Properties and computation of the Coulomb pair density matrix 52 (1988/1989) 49

Computational methods *(continued)*

4.6. Fourier transforms

Wormeester, H., A.G.B.M. Sasse and A. van Silfhout, Deconvolution, differentiation and Fourier Transformation algorithms for noise-containing data based on splines and global approximation 52 (1988/1989) 19

Damarowsky, M. and G.H. Guthöhrlein, Spectral analysis without knowledge of the line shape function by use of a new numerical procedure 52 (1988/1989) 187

Hogeweij, G.M.D., G. Hordósy and N.J. Lopes Cardozo, Heat transport analysis with error calculation 59 (1990) 245

4.7. Other functions

Butler, J.W., A proposed new approach to the expansion of mathematical functions 54 (1989) 221

Kamgnia, E. and A. Sameh, A fast elliptic solver for simply connected domains 55 (1989) 43

Weniger, E.J. and J. Cížek, Rational approximations for the modified Bessel function of the second kind 59 (1990) 471

Lee, D.K., Application of theta functions for numerical evaluation of complete elliptic integrals of the fist and second kinds 60 (1990) 319

4.8. Matrices

DeGrand, Th.A., A conditioning technique for matrix inversion for Wilson fermions 52 (1988/1989) 161

Young, D.M., A historical overview of iterative methods 53 (1989) 1

Cullum, J., W. Kerner and R. Willoughby, A generalized nonsymmetric Lanczos procedure 53 (1989) 19

Davidson, E.R., Super-matrix methods 53 (1989) 49

Boley, D., R. Maier and J. Kim, A parallel QR algorithm for the nonsymmetric eigenvalue problem 53 (1989) 61

Saad, Y., Numerical solution of large nonsymmetric eigenvalue problems 53 (1989) 71

Kress, J.D., G.A. Parker, R. T Pack, B.J. Archer and W.A. Cook, Comparison of Lanczos and subspace iterations for hyperspherical reaction path calculations 53 (1989) 91

Kress, J.D., S.B. Woodruff, G.A. Parker and R. T Pack, Some strategies for enhancing the performance of the block Lanczos method 53 (1989) 109

Gil, T.J., C.L. Winstead and P.W. Langhoff, Lanczos methods for Hamiltonian spectra: Hilbert-space approximations to interaction-prepared states 53 (1989) 123

Haydock, R., Accuracy of the recursion method and basis nonorthogonality 53 (1989) 133

Nex, C.M.M., The block Lanczos algorithm and the calculation of matrix resolvents 53 (1989) 141

Nour-Omid, B., Applications of the Lanczos method 53 (1989) 157

Parlett, B.N. and B. Nour-Omid, Towards a black box Lanczos program 53 (1989) 169

Keyes, D.E., Domain decomposition methods for the parallel computation of reacting flows 53 (1989) 181

Bank, R.E., W.M. Coughran Jr., M.A. Driscoll, R.K. Smith and W. Fichtner, Iterative methods in semiconductor device simulation 53 (1989) 201

Lewis, J.G. and D.J. Pierce, Recent research in iterative methods at Boeing 53 (1989) 213

van der Vorst, H.A., ICCG and related methods for 3D problems on vector computers 53 (1989) 223

Chan, T.F., C-C.J. Kuo and C. Tong, Parallel elliptic preconditioners: Fourier analysis and performance on the connection machine 53 (1989) 237

Elman, H.C. and E. Agrón, Ordering techniques for the preconditioned conjugate gradient method on parallel computers 53 (1989) 253

Computational methods — *Matrices (continued)*

Scott, D.S., Implementing Lanczos-like algorithms on hypercube architectures 53 (1989) 271
Oppe, T.C., W.D. Joubert and D.R. Kincaid, An overview of NSPCG: a nonsymmetric preconditioned conjugate gradient package 53 (1989) 283
Greenbaum, A., C. Li and H.Z. Chao, Parallelizing preconditioned conjugate gradient algorithms 53 (1989) 295
Walker, H.F., Implementations of the GMRES method 53 (1989) 311
Navarra, A., An application of GMRES to indefinite linear problems in meteorology 53 (1989) 321
Duneczky, C., R.E. Wyatt, D. Chatfield, K. Haug, D.W. Schwenke, D.G. Truhlar, Y. Sun and D.J. Kouri, Iterative methods for solving the nonsparse equations of quantum mechanical reactive scattering 53 (1989) 357
Schneider, B.I. and L.A. Collins, A direct iterative–variational method for solving large sets of linear algebraic equations 53 (1989) 381
Fortin, M., Some iterative methods for incompressible flow problems 53 (1989) 393
Tezduyar, T.E. and J. Liou, Grouped element-by-element iteration schemes for incompressible flow computations 53 (1989) 441
Meurant, G., Practical use of the conjugate gradient method on parallel supercomputers 53 (1989) 467
Haydock, R., Recursive tridiagonalization of infinite dimensional Hamiltonians 55 (1989) 1
Friedman, R.S. and M.J. Jamieson, Model potentials for multichannel eigenvalue problems 55 (1989) 137
Burkitt, A.N. and A.C. Irving, Inversion of the fermion matrix and the equivalence of the conjugate gradient and Lanczos algorithms 59 (1990) 447

4.9. Minimization and fitting
Wormeester, H., A.G.B.M. Sasse and A. van Silfhout, Deconvolution, differentiation and Fourier Transformation algorithms for noise-containing data based on splines and global approximation 52 (1988/1989) 19
Damarowsky, M. and G.H. Guthöhrlein, Spectral analysis without knowledge of the line shape function by use of a new numerical procedure 52 (1988/1989) 187
Pantelic, D.V. and Z.D. Janevski, A new kind of splines and their use for fast ray-tracing in reflective cavities 55 (1989) 5
Billoir, P., Progressive track recognition with a Kalman-like fitting procedure 57 (1989) 390

4.11. Quadratures
Migneron, R., K.S.S. Narayanan and H. Rasmussen, Numerical inversion of moments 54 (1989) 239

4.12. Other numerical methods
Sobottka, S.E., R.J. Chandross, G.G. Cornick, B.D. Justice, R.S. Stewart and J.A. Thomas, Fast algorithm for identifying clusters in digitized images 51 (1988) 295
Murtagh, F.D., Hierarchical trees in N-body simulations: relations with cluster analysis methods 52 (1988/1989) 15
Keyes, D.E., Domain decomposition methods for the parallel computation of reacting flows 53 (1989) 181
van der Vorst, H.A., ICCG and related methods for 3D problems on vector computers 53 (1989) 223
Chan, T.F., C-C.J. Kuo and C. Tong, Parallel elliptic preconditioners: Fourier analysis and performance on the connection machine 53 (1989) 237

Computational methods — *Other numerical methods (continued)*

Elman, H.C. and E. Agrón, Ordering techniques for the preconditioned conjugate gradient method on parallel computers 53 (1989) 253
Oppe, T.C., W.D. Joubert and D.R. Kincaid, An overview of NSPCG: a nonsymmetric preconditioned conjugate gradient package 53 (1989) 283
Greenbaum, A., C. Li and H.Z. Chao, Parallelizing preconditioned conjugate gradient algorithms 53 (1989) 295
Walker, H.F., Implementations of the GMRES method 53 (1989) 311
Kelkar, K. M. and S.V. Patankar, Development of generalized block correction procedures for the solution of descretized Navier–Stokes equations 53 (1989) 329
Parsons, I.D., The implementations of an element level multigrid algorithm on the Alliant FX/8 53 (1989) 337
Foresti, S., G. Brussino, S. Hassanzadeh and V. Sonnad, Multilevel solution method for the p-version of finite elements 53 (1989) 349
Duneczky, C., R.E. Wyatt, D. Chatfield, K. Haug, D.W. Schwenke, D.G. Truhlar, Y. Sun and D.J. Kouri, Iterative methods for solving the nonsparse equations of quantum mechanical reactive scattering 53 (1989) 357
Schneider, B.I. and L.A. Collins, A direct iterative–variational method for solving large sets of linear algebraic equations 53 (1989) 381
Fortin, M., Some iterative methods for incompressible flow problems 53 (1989) 393
Dean, E., R. Glowinski and C.H. Li, Supercomputer solutions of partial differential equation problems in computational fluid dynamics and in control 53 (1989) 401
Cohen, R., S.-Y. Lin and M. Luskin, Relaxation and gradient methods for molecular orientation in liquid crystals 53 (1989) 455
Dubey, I.P. and S.K. Upadhyay, A trivariate interpolation method developed on the basis of Akima's bivariate interpolation procedure 54 (1989) 23
Migneron, R., K.S.S. Narayanan and H. Rasmussen, Numerical inversion of moments 54 (1989) 239
Kamgnia, E. and A. Sameh, A fast elliptic solver for simply connected domains 55 (1989) 43
McColl, W.F., Parallel algorithms and architectures 57 (1989) 84
May, E.N., Portable parallel programming in a Fortran environment 57 (1989) 278
Wilson, S., Universal basis sets and Cholesky decomposition of the two-electron integral matrix 58 (1990) 71
Jaquet, R., Application of the finite element method to eigenvalue problems. I. One dimensional calcualtions using optimized elements 58 (1990) 257
Llobet, X., K. Appert, A. Bondeson and J. Vaclavik, On spectral pollution 59 (1990) 199
Weniger, E.J. and J. Cížek, Rational approximations for the modified Bessel function of the second kind 59 (1990) 471
Sararu, A. and M. Sararu, Stability of finite linear combinations of vectors under changes of their coefficients. An application to approximation problems 60 (1990) 47

4.13. Statistical methods

Vohwinkel, C., A fast method to gather neighbors in vectorized Monte Carlo simulations 51 (1988) 323
De Angelis, A., A class of N-dimensional probability density functions suitable for random generation 52 (1988/1989) 61
Decker, K., Numerical investigation of a coarse-to-fine transormation for multigrid Monte Carlo updating 54 (1989) 1

Computational methods — *Statistical methods (continued)*

Fernandez, J.E., Monte Carlo computer simulation of the XRF intensity dependence on the propagation plane inclination 54 (1989) 211
Amar, J.G. and F. Sullivan, Monte Carlo simulaton of domain growth in the kinetic Ising model on the connection machine 55 (1989) 287
Marshall, G., Monte Carlo methods for the solution of nonlinear partial differential equations 56 (1989/1990) 51
Toussaint, D., Introduction to algorithms for Monte Carlo simulations and their application to QCD 56 (1989/1990) 69
Gils, H.J., D. Heck, J. Oehlschläger, G. Schatz, T. Thouw and A. Merkel, A multi-transputer system for parallel Monte Carlo simulation of extensive air showers 56 (1989/1990) 105
Barlow, R. and P. Hinde, Fitting the ratio of two distributions 56 (1989/1990) 325
Martin, W.R., Successful vectorization – reactor physics Monte Carlo code 57 (1989) 68
Berretti, A. and A.D. Sokal, Vectorized program for Monte Carlo simulation of self-avoiding walks 58 (1990) 1
Wang, C.-J. and C.-H. Wu, Concurrent and vectorized Monte Carlo simulation of the evolution of an assembly of particles increasing in number 58 (1990) 63
Zlokazov, V.B., Analysis of hidden anharmonic periodicities 59 (1990) 217
Desalvo, A., G. Erbacci and R. Rosa, Vectorized code for the three-dimensional spin-exchange kinetic Ising model on cubic and diamond lattices 60 (1990) 305
Heermann, D.W., P. Nielaba and M. Rovere, Hybrid molecular dynamics 60 (1990) 311

4.14. Utility

Bhowmick, S., R. Bhattacharya and D. Roy, Iterations of convergence accelerating nonlinear transforms 54 (1989) 31
Bhattacharya, R., D. Roy and S. Bhowmick, On the regularity of the Levin u-transform 55 (1989) 297
Aiello, G.R., M. Budinich and E. Milotti, Hardware implementation of a GFSR pseudo-random number generator 56 (1989/1990) 135
Brody, T.A., Random-number generation for parallel processors 56 (1989/1990) 147
Lessner, E.S., Weighted fit of parametric functions to distributions. The new interface of HBOOK with MINUIT 57 (1989) 385
Ilyin, V.A., A.P. Kryukov, A.Ya. Rodioniov and A.Yu. Taranov, High speed Dirac algebra calculations in a space of arbitrary dimension by means of a computer algebra system 57 (1989) 505
Unonius, L. and P. Paatero, Use of singular value decomposition for analyzing repetitive measurements 59 (1990) 225
Mohamed, A.R. and M.A. El Sharkawy, 16-bit microprocessor in second-order state-space digital filter design and implementation 59 (1990) 283
Rycerz, Z.A., Acceleration of molecular dynamics simulation of order N with neighbour list 60 (1990) 297

5. Computer algebra

Küblbeck, J., M. Böhm and A. Denner, Feyn Arts – Computer-algebraic generation of Feynman graphs and amplitudes 60 (1990) 165

6. Computer languages, hardware and software

6.1. Hardware

Capotondi, A., V. Sonnad and S. Chin, Parallel solution of the shallow water equations using an explicit finite difference algorithm 52 (1988/1989) 195
Grosdidier, G., Use of an IBM-FPS loosely coupled array of processors for high energy physics programs 52 (1988/1989) 207
van der Vorst, H.A., ICCG and related methods for 3D problems on vector computers 53 (1989) 223
Chan, T.F., C-C.J. Kuo and C. Tong, Parallel elliptic preconditioners: Fourier analysis and performance on the connection machine 53 (1989) 237
Elman, H.C. and E. Agrón, Ordering techniques for the preconditioned conjugate gradient method on parallel computers 53 (1989) 253
Scott, D.S., Implementing Lanczos-like algorithms on hypercube architectures 53 (1989) 271
Parsons, I.D., The implementations of an element level multigrid algorithm on the Alliant FX/8 53 (1989) 337
Meurant, G., Practical use of the conjugate gradient method on parallel supercomputers 53 (1989) 467
Burkitt, A. N. and D.W. Heermann, Parallelization of a cluster algorithm 54 (1989) 201
Raine, A.R.C., D. Fincham and W. Smith, Systolic loop methods for molecular dynamics simulation using multiple transputers 55 (1989) 13
Amar, J.G. and F. Sullivan, Monte Carlo simulaton of domain growth in the kinetic Ising model on the connection machine 55 (1989) 287
Hey, A.J.G., The role of MIMD arrays of transputers in computational physics 56 (1989/1990) 1
Huberman, B.A., Parallel computation 56 (1989/1990) 25
Gils, H.J., D. Heck, J. Oehlschläger, G. Schatz, T. Thouw and A. Merkel, A multi-transputer system for parallel Monte Carlo simulation of extensive air showers 56 (1989/1990) 105
Aiello, G.R., M. Budinich and E. Milotti, Hardware implementation of a GFSR pseudo-random number generator 56 (1989/1990) 135
Aiello, G.R., M. Budinich and E. Milotti, A parallel processor for the simulation of Ising spin systems 56 (1989/1990) 141
Otto, S.W., Shared-memory versus distributed-memory: halftime score 57 (1989) 95
Levine, R.H., You want me to predict the future? 57 (1989) 118
Avico, N., P. Bacilieri, S. Cabasino, N. Cabibbo, L.A. Fernández, G. Fiorentini, A. Lai, M.P. Lombardo, E. Marinari, F. Marzano, P. Paolucci, G. Parisi, J. Pech, F. Rapuano, E. Remiddi, R. Sarno, G. Salina, A. Tarancón, G.M. Todesco, M.Torelli, R. Tripiccione and W. Tross, From APE to APE-100: from 1 to 100 Gflops in lattice gauge theory simulations 57 (1989) 285
Flieller, S., T.Node, industrial version of SuperNode 57 (1989) 492
Berretti, A. and A.D. Sokal, Vectorized program for Monte Carlo simulation of self-avoiding walks 58 (1990) 1
Mohamed, A.R. and M.A. El Sharkawy, 16-bit microprocessor in second-order state-space digital filter design and implementation 59 (1990) 283
Ito, T., J. Makino, T. Ebisuzaki and D. Sugimoto, A special-purpose N-body machine GRAPE-1 60 (1990) 187

6.2. Languages

Hey, A.J.G., The role of MIMD arrays of transputers in computational physics 56 (1989/1990) 1
Metcalf, M., Recent progress in Fortran standardization 57 (1989) 78

Computer languages, hardware and software — *Languages (continued)*

Chandra, U., G. Riccardi, J. Vagi, J.-L. Dekeyser and F. Hannedouche, Aftran: array Fortran programming language 57 (1989) 263
White, B., The comparison and selection of programming languages for high energy physics applications 57 (1989) 538

6.3. Networks
Grosdidier, G., Use of an IBM-FPS loosely coupled array of processors for high energy physics programs 52 (1988/1989) 207
Scott, D.S., Implementing Lanczos-like algorithms on hypercube architectures 53 (1989) 271
Burkitt, A. N. and D.W. Heermann, Parallelization of a cluster algorithm 54 (1989) 201
Raine, A.R.C., D. Fincham and W. Smith, Systolic loop methods for molecular dynamics simulation using multiple transputers 55 (1989) 13
Hey, A.J.G., The role of MIMD arrays of transputers in computational physics 56 (1989/1990) 1
Huberman, B.A., Parallel computation 56 (1989/1990) 25
Slaets, J.F.W. and G. Travieso, Parallel computing: a case study 56 (1989/1990) 63
Gils, H.J., D. Heck, J. Oehlschläger, G. Schatz, T. Thouw and A. Merkel, A multi-transputer system for parallel Monte Carlo simulation of extensive air showers 56 (1989/1990) 105
Aiello, G.R., M. Budinich and E. Milotti, A parallel processor for the simulation of Ising spin systems 56 (1989/1990) 141
Booth, S.P., K.C. Bowler, D.J. Candlin, R.D. Kenway, B.J. Pendleton, A.M. Thornton, D.J. Wallace, J. Blair-Fish and D. Roweth, Large scale applications of transputers in HEP: the Edinburgh Concurrent Supercomputer Project 57 (1989) 101
Forrest, B.M., A. Baumgärtner and D.W. Heermann, Parallel simulation of dense two-dimensional polymer systems 59 (1990) 455
Brugè, F. and S.L. Fornili, Concurrent molecular dynamics simulation of spinodal phase transition on transputer arrays 60 (1990) 31
Brugè, F. and S.L. Fornili, A distributed dynamic load balancer and its implementation on multi-transputer systems for molecular dynamics simulation 60 (1990) 39
Reale, F., F. Brugè, G. Peres, S.L. Fornili, V. Martorana and S. Serio, One-dimensional hydrodynamic modeling of coronal plasmas on transputer arrays 60 (1990) 201

6.4. Neural networks
Parga, N., Neural networks as models of associative memories 55 (1989) 77
Koberle, R., Neural networks as content addressable memories and learining machines 56 (1989/1990) 43
Virasoro, M.A., Disordered models of the brain 56 (1989/1990) 93
Würtz, D. and G. Hartung, Neural computing on a system of parallel organized transputers: software implementation and hardware configuration 56 (1989/1990) 155
Denby, B. and S.L. Linn, Spatial pattern recognition in a high energy particle detector using a neural network algorithm 56 (1989/1990) 293
Humpert, B., On the use of neural networks in high energy physics experiments 56 (1989/1990) 299
Treleaven, P. and M. Vellasco, Neural computing overview 57 (1989) 543
Humpert, B., A comparitive study of neural network architectures 58 (1990) 223

6.5. Software
Raine, A.R.C., D. Fincham and W. Smith, Systolic loop methods for molecular dynamics simulation using multiple transputers 55 (1989) 13

Computer languages, hardware and software — *Software (continued)*

Moncrieff, D., D.J. Baker and S. Wilson, Diagrammatic many-body perturbation expansion for atoms and molecules. VI 55 (1989) 31
Grest, G.S., B. Dünweg and K. Kremer, Vectorized link cell FORTRAN code for molecular dynamics simulaton for a large number of particles 55 (1989) 269
Amar, J.G. and F. Sullivan, Monte Carlo simulaton of domain growth in the kinetic Ising model on the connection machine 55 (1989) 287
Mazza, C., Software project management 57 (1989) 23
Gather, K.S., SASD-tools for program design 57 (1989) 29
Sufrin, B., Formal methods in system design and implementation 57 (1989) 108
Kunz, P.F., Software management issues 57 (1989) 191
Hoare, C.A.R., Formal methods in computer system design 57 (1989) 206
Hall, D.E., W.H. Greiman, W.F. Johnston, A.X. Merola, S.C. Loken and D.W. Robertson, The software bus: a vision for scientific software development 57 (1989) 211
Story, C.M., Software engineering in industry 57 (1989) 217
Berny, L. and H. Frese, Automatic generation of software detailed design documents for C language programs 57 (1989) 476

7. Condensed matter and surface science

7.3. Electronic structure

Haydock, R., Accuracy of the recursion method and basis nonorthogonality 53 (1989) 133
Nex, C.M.M., The block Lanczos algorithm and the calculation of matrix resolvents 53 (1989) 141
Lee, M.H., Frequency moment sum rules, recurrence relations and continued fractions in nonequilibrium statistical mechanics 53 (1989) 147
Teo, K.H., W. Allegretto, J.N. McMullin and H.G. Schmidt-Weinmar, Self-consistent calculation of the density-of-states mass of holes in 2-D silicon structures 59 (1990) 277

7.7. Other condensed matter physics inc. simulation of liquids and solids

Schoen, M., Structure of a simple molecular dynamics FORTRAN program optimized for CRAY vector processing computers 52 (1988/1989) 175
Bank, R.E., W.M. Coughran Jr., M.A. Driscoll, R.K. Smith and W. Fichtner, Iterative methods in semiconductor device simulation 53 (1989) 201
Mościński, M., J. Kitowski, Z.A. Rycerz and P.W.M. Jacobs, A vectorized algorithm on the ETA 10-P for molecular dynamics simulation of large number of particles confined in a long cylinder 54 (1989) 47
Raine, A.R.C., D. Fincham and W. Smith, Systolic loop methods for molecular dynamics simulation using multiple transputers 55 (1989) 13
Slaets, J.F.W. and G. Travieso, Parallel computing: a case study 56 (1989/1990) 63
Morales, J.J., L.F. Rull and S. Toxvaerd, Efficiency test of the traditional MD and the link-cell methods 56 (1989/1990) 129
Brecht, S.H. and J.R. Ferrante, Vortex-in-cell calculations in three dimensions 58 (1990) 25
Pais, V.A. and A. Caruso, A collisional method to correct the mesh distortion in two-dimensional Langrangian hydrocodes 58 (1990) 55
Wu, E.Y. and R.J. Friauf, Techniques for achieving thermal equilibrium in molecular dynamics calculations for solids 59 (1990) 259

Condensed matter and surface science — *Other condensed matter physics inc. simulation of liquids and solids (continued)*

Arnold, A. and N. Mauser, An efficient method of bookkeeping next neighbours in molecular dynamics simulations 59 (1990) 267
Randrup, J., Microcanonical sampling of momenta in simulations of many-particle systems 59 (1990) 439
Singer, S.J., Multiparticle Monte Carlo moves: algorithm for solids with free-energy determination 59 (1990) 463
Evans, M.W., On the isolation of possible artifacts due to cubic periodic boundary conditions 59 (1990) 495
Brugè, F. and S.L. Fornili, Concurrent molecular dynamics simulation of spinodal phase transition on transputer arrays 60 (1990) 31
Brugè, F. and S.L. Fornili, A distributed dynamic load balancer and its implementation on multi-transputer systems for molecular dynamics simulation 60 (1990) 39
Wang, S.C., C.K. Chan and S.P. Li, A vectorized algorithm on the ETA-10Q for MD simulation of particles in a box interacting by long-ranged forces 60 (1990) 181
Morales, J.J. and M.J. Nuevo, A technique for improving the link-cell method 60 (1990) 195
Chialvo, A.A. and P.G. Debenedetti, On the use of the Verlet neighbor list in molecular dynamics 60 (1990) 215
Rycerz, Z.A., Acceleration of molecular dynamics simulation of order N with neighbour list 60 (1990) 297
Desalvo, A., G. Erbacci and R. Rosa, Vectorized code for the three-dimensional spin-exchange kinetic Ising model on cubic and diamond lattices 60 (1990) 305
Heermann, D.W., P. Nielaba and M. Rovere, Hybrid molecular dynamics 60 (1990) 311

7.8. Structure and lattice dynamics
Rosato, V., G. Maino and A. Ventura, A molecular dynamics model for the study of helium on transition metals 54 (1989) 251
Babalievski, F. and O. Peshev, An algorithm to construct quasilattices and study percolation on them 60 (1990) 27
Stefanou, N., H. Akai and R. Zeller, An efficient numerical method to calculate shape truncation functions for Wigner–Seitz atomic polyhedra 60 (1990) 231

7.10. Collisions in solids
Rosato, V., G. Maino and A. Ventura, A molecular dynamics model for the study of helium on transition metals 54 (1989) 251

9. Data bases, data compilation & information retrieval

Putzer, A., Data structures and data-base systems used in high energy physics: modelling and implementation 57 (1989) 156
Read, B.J., Data structures and organisation: special problems in scientific applications 57 (1989) 164
Skotniczny, Z., Query by Forms: user-oriented relational database retrieving system and its application in analysis of experiment data 57 (1989) 225
Rushton, A.M., L. Hunt, T. McGlynn, F. Ochsenbein, B. Perrine, A. Richmond, F. Romelfanger, G. Russo, P.M.B. Shames, J. Travisano, L. Willard and S. Zeller, Design and implementation of an optical disk-based astronomical data archive 57 (1989) 427

Data bases, data compilation & information retrieval *(continued)*

Whalley, M.R., The Durham-RAL high energy physics databases – HEPDATA 57 (1989) 536

11. Elementary particle physics

11.1. General, high energy physics and computing

Colangelo, P., L. Cosmai and E. Scrimieri, Computer simulation of gauge theories on a lattice with improved rotational symmetry 54 (1989) 235
Humpert, B., On the use of neural networks in high energy physics experiments 56 (1989/1990) 299
Bock, R.K., Bringing together high energy physicist and computer scientist. A summary of the Oxford conference on Computing in High Energy Physics 57 (1989) 1
Williams, D.O., Computing on the eve of LEP data-taking: are we ready? 57 (1989) 8
Hertzberger, L.O., Does HEP still hold challenges for computer science? 57 (1989) 15
Mackenzie, P.B., Machines for lattice gauge theory 57 (1989) 37
Nash, T., Event parallelism: distributed memory parallel computing for high energy physics experiments 57 (1989) 47
Gamble, J.N., Beyond Ethernet – future LAN's 57 (1989) 129
Wiegandt, D., UNIX and HEP 57 (1989) 134
Myers, D.R., HEP graphics: standard and portability versus performance and cost 57 (1989) 176
Fluckiger, F., Overview of HEP wide area networking: producer perspective 57 (1989) 183
Hutton, J., Future scientific networking 57 (1989) 188
Watase, Y., High energy physics computing in Japan 57 (1989) 198
Kowalski, H., T. Poser, L. Stanco and E. Tscheslog, Investigation of ADAMO performance in the ZEUS calorimeter reconstruction program 57 (1989) 222
Lebrun, P. and A. Kreymer, High level language memory management on parallel architectures 57 (1989) 231
Brun, M., R. Brun and A.A. Rademakers, CMZ – a source code management system 57 (1989) 235
Mueller, K. and P. Pfeifer, CODEBASE: a commercially developed code management system and code transfer facility 57 (1989) 239
van Herwijnen, E., The use of text interchange standards for submitting physics articles to journals 57 (1989) 244
NA-35 Collaboration, , G. Vesztergombi, "Iconic" tracking algorithms for high energy physics using the TRAX-I massively parallel processor 57 (1989) 290
Denby, B. and S.L. Linn, Status of HEP neural net research in the USA 57 (1989) 297
Bizeau, C., A. Bogaerts, R.W. Dobinson, D.R.N. Jeffery, W. Lu, C. Parkman and Y. Perrin, The use and possible abuse of transputer links 57 (1989) 301
Nichols, J., The Fermilab central computing facility architectural model 57 (1989) 417
Avery, P. and A. White, UFMULTI: a new parallel processing software system for HEP 57 (1989) 422
Schilling, P.K., Graphics at DESY 57 (1989) 443
Runge, K., A high speed network for HEP in Germany 57 (1989) 452
Karita, Y., F. Abe, H. Hirose, H. Goto, R. Ogasawara, F. Yuasa, Y. Banno and Y. Yasu, Networking for high energy physics in Japan 57 (1989) 455
Bacilieri, P., B. Caccia, R. Cardarelli, G.P. Carlucci, O. Ciaffoni, M. Coli, G. Di Pirro, M.L. Ferrer, A. Ghiselli, A. Martini, G. Medici, G. Mirabelli, E. Pace, R. Santonico, L. Trasatti, E. Valente and S. Valentini, STARNET, a fiber optic metropolitan area network with centralized control 57 (1989) 459

Elementary particle physics — *General, high energy physics and computing (continued)*

Adye, T., T. Berners-Lee, S. Brobecker, A. Camacho, D. Davids, F. Harris and P. Lorenz, Online communications in the DELPHI experiment 57 (1989) 466
da Rocha, A.R.C. and S. Palermo, Software quality assurance in HEP 57 (1989) 524
Schaile, O., DZDISP: a graphics tool to interact with ZEBRA data structures 57 (1989) 528
Voevodin, V.P., V.N. Govorun, A.M. Davidenko, An.V. Ekimov, N.S. Ivanova, V.I. Kovaltsov, Yu.M. Kozyaev, A.F. Lukyantsev, M.Yu. Matveev, V.A. Senko, A.N. Sytin and G.V. Tishin, The 780/E 32-bit specialized processor-emulator 57 (1989) 532

11.3. Cascade and shower simulation
Gils, H.J., D. Heck, J. Oehlschläger, G. Schatz, T. Thouw and A. Merkel, A multi-transputer system for parallel Monte Carlo simulation of extensive air showers 56 (1989/1990) 105
Chen, H.-S., Fast simulation of showers in inhomogeneous media 57 (1989) 375

11.4. Quantum electrodynamics (see also Feynman diagrams, §4.4)
Küblbeck, J., M. Böhm and A. Denner, Feyn Arts – Computer-algebraic generation of Feynman graphs and amplitudes 60 (1990) 165

11.5. Quantum chromodynamics, lattice gauge theory
Nakamura, A., G. Feuer, H.C. Hege, V. Linke and M. Haraguchi, Fast algorithm for an exact treatment of lattice quantum chromodynamics by Monte Carlo simulation on vector processors 51 (1988) 301
Vohwinkel, C., A fast method to gather neighbors in vectorized Monte Carlo simulations 51 (1988) 323
Kronfeld, A.S., K.J.M. Moriarty and G. Schierholz, An efficient method for the computation of glueball masses using the inverse of the covariant Dirac operator as correlator 52 (1988/1989) 1
Decker, K., Numerical investigation of a coarse-to-fine transormation for multigrid Monte Carlo updating 54 (1989) 1
Biddulph, P. and G. Thompson, Improved modelling of independent parton hadronization 54 (1989) 13
Toussaint, D., Introduction to algorithms for Monte Carlo simulations and their application to QCD 56 (1989/1990) 69
Mackenzie, P.B., Machines for lattice gauge theory 57 (1989) 37
Kennedy, A.D., Status of lattice gauge theory calculations 57 (1989) 57
Avico, N., P. Bacilieri, S. Cabasino, N. Cabibbo, L.A. Fernández, G. Fiorentini, A. Lai, M.P. Lombardo, E. Marinari, F. Marzano, P. Paolucci, G. Parisi, J. Pech, F. Rapuano, E. Remiddi, R. Sarno, G. Salina, A. Tarancón, G.M. Todesco, M.Torelli, R. Tripiccione and W. Tross, From APE to APE-100: from 1 to 100 Gflops in lattice gauge theory simulations 57 (1989) 285
Knowles, I.G., A linear algorithm for calculating spin correlations in hadronic collisions 58 (1990) 271
Burkitt, A.N. and A.C. Irving, Inversion of the fermion matrix and the equivalence of the conjugate gradient and Lanczos algorithms 59 (1990) 447
Degrand, T.A. and P. Rossi, Conditioning techniques for dynamical fermions 60 (1990) 211

11.7. Detector design and simulation
Youssef, S., W. Martin, T.C. Wan and S. Wilderman, A vectorized Monte Carlo detector simulation program for electromagnetic interactions 57 (1989) 251

Elementary particle physics — *Detector design and simulation (continued)*

Georiopoulos, C.H. and M.E. Mermikides, Vectorized simulation of the response of a time projection chamber 57 (1989) 255
Corden, M.J., C.H. Georiopoulos and M.E. Mermikides, Implementation of the ALEPH detector simulation code using UNIX with on-line graphics display 57 (1989) 260
Corden, M.J., C.H. Georgiopoulos, R. Brun, F. Bruyant and J.-L. Dekeyser, Progress towards a vectorized version of the GEANT Monte Carlo program 57 (1989) 268
Dobberstein, M.P., The calibration of the ZEUS forward drift chamber: an application for software with a high degree of parallelism 57 (1989) 483
Jejcic, A., J. Maillard, J. Silva, M. Auguin and F. Boeri, Could running experience on SPMD computers contribute to the architectural choices for future dedicated computers for high energy physics simulation? 57 (1989) 507
Männer, R., A programmable systolic array correlator as a trigger processor for electron pairs in RICH (ring image Cherenkov) counters 57 (1989) 516
Hallam-Baker, P.M. and I.C. McArthur, Use of Occam in ZEUS 57 (1989) 520

11.8. Detector control and data acquisition
Krischer, W., Commercial highly parallel signal processors on-line? 57 (1989) 121
Briggs, D., T. Glanzman, P. Grosse-Wiesmann, J. Tinsman, S. Holmgren and M.W. Schaad, A calorimeter software trigger for the Mark II detector at SLC 57 (1989) 273
Thaler, J.J., Data-acquisition modeling and simulation 57 (1989) 309
ZEUS CDAQ Collaboration, , P. Erhard, J. Ficenec, K. Gather, G. Heath, M. Iacovacci, J. Kehres, R. Loveless, M. Mobayyen, D. Notz, R. Orr, A. Sephton, R. Stroili, K. Tokushuku, W. Vogel, J. Whitmore and L. Wiggers, ZEUS hardware control system 57 (1989) 313
ZEUS Collaboration, , L.W. Wiggers and J.C. Vermeulen, The use of transputers in the ZEUS online system 57 (1989) 316
ZEUS CDAQ Collaboration, , S. Bhadra, M. Crombie, D. Kirkby and R.S. Orr, The ZEUS third-level trigger system 57 (1989) 321
Quarrie, D.R., M.D. Anderson, C.T. Day, G. Goeransson, J. Patrick, M. Schmitz, E. Sexton and B. Troemel, The CDF online system 57 (1989) 325
Booth, A.W., J.T. Carroll, R. Forster, G. Goeransson, L. Gustafsson and N. Ho, A knowledge-based approach to network and module diagnosis 57 (1989) 332
Cutts, D., J.S. Hoftun, C.R. Johnson and R.T. Zeller, Data acquisition at D0 57 (1989) 339
Sendall, D.M., C. Boissat, W. Bozzoli, P. Burkimsher, R. Jones, J-P. Matheys, G. Mornacchi, T. Nguyen, P. Vande Vyvre, A. Vascotto and D. Weaver, MODEL: a software suite for data acquisition 57 (1989) 343
White, V., Distributed data-acquisition systems (PAN-DA) for Fermilab experiments 57 (1989) 348
Saulys, A.C., A. Etkin, K.J. Foley, R.W. Hackenburg, R.S. Longacre, W.A. Love, T.W. Morris, E.D. Platner, S.J. Lindenbaum, C.S. Chan and M.A. Kramer, MPS data-acquisition software system 57 (1989) 353
Barao, F., C. Gaspar, Ph. Gavillet, J.Ph. Laugier, B. Martin, P. Moreau, M. Pimenta, M. Reis and J. Varela, DELPHI's central partition 57 (1989) 358
Werner, C.M.L., M. Pimenta, J. Varela and J. Souza, FADO 2.0: a high level tagging language 57 (1989) 364
Cittolin, S., M. Demoulin, A. Fucci, W. Haynes, B. Martin, J.P. Porte and P. Sphicas, The third level trigger and output event unit of the UA1 data-acquisition system 57 (1989) 370

Elementary particle physics — *Detector control and data acquisition (continued)*

Wan Abdullah, W.A.T., Connectionist architectures for triggering and track reconstruction 57 (1989) 472
Cutts, D., J.S, Hoftun, A. Sornborger, C.R. Johnson and R.T. Zeller, Neural networks for event filtering at D0 57 (1989) 478
Hall, D.E., A. Agogino, W.H. Greiman, W.F. Johnston, D. Olson, R. Paasch, A. Padgaonkar and D.W. Robertson, A fault location system for a time of flight detector array 57 (1989) 499
Boissat, C., R. Jones and G. Mornacchi, The model human interface 57 (1989) 512
Budinich, M. and S. Esquivel, An efficient algorithm for charged tracks pattern recognition 58 (1990) 83

11.9. Event reconstruction and data analysis (except data bases)

Denby, B. and S.L. Linn, Spatial pattern recognition in a high energy particle detector using a neural network algorithm 56 (1989/1990) 293
Nash, T., Event parallelism: distributed memory parallel computing for high energy physics experiments 57 (1989) 47
Mount, R.P., Overview of the essential tools 57 (1989) 140
Blobel, V., From DST to publication 57 (1989) 148
Fisher, S.M. and P. Palazzi, Using a data model from software design to data analysis: what have we learned 57 (1989) 169
Stanco, L., Particle track recontruction in heavy materials with the Kalman technique 57 (1989) 380
Lessner, E.S., Weighted fit of parametric functions to distributions. The new interface of HBOOK with MINUIT 57 (1989) 385
Billoir, P., Progressive track recognition with a Kalman-like fitting procedure 57 (1989) 390
Dittus, F., Parallel processing with attached processors in a computer center environment 57 (1989) 395
Delfino, M., E. Fernández, S. Orteu and A. Pacheco, The ALEPH event reconstruction faciltity: parallel processing using workstations 57 (1989) 401
Sliwa, K., CDF's experience with a parallel architecture multiprocessor system – ACP 57 (1989) 407
O'Neale, S.W., The OPAL event server 57 (1989) 413
Brun, R., O. Couet, C.E. Vandoni and P. Zanarini, PAW, a general-purpose portable software tool for data analysis and presentation 57 (1989) 432
Johnstad, H., PAW at Fermilab 57 (1989) 438
Bonissent, A. and F. Etienne, Artificial intelligence steering for the interactive analysis of a high energy physics experiment 57 (1989) 447
Booth, S.P., R.W. Dobinson, D.R.N. Jeffery, W. Lu, K.M. Storr and A. Thornton, An evaluation of the Meiko computing surface for HEP Fortran farming 57 (1989) 486
Carter, J.M., M.G. Green and T. Medcalf, Transparent use of transputers for off-line computation 57 (1989) 495
Hoek, J., Use of attached transputer hardware to VAX's for offline analysis 57 (1989) 503

11.11. Data structures and data base systems

Putzer, A., Data structures and data-base systems used in high energy physics: modelling and implementation 57 (1989) 156

12. Gases and fluids

Capotondi, A., V. Sonnad and S. Chin, Parallel solution of the shallow water equations using an explicit finite difference algorithm 52 (1988/1989) 195
Navarra, A., An application of GMRES to indefinite linear problems in meteorology 53 (1989) 321
Kelkar, K. M. and S.V. Patankar, Development of generalized block correction procedures for the solution of descretized Navier–Stokes equations 53 (1989) 329
Fortin, M., Some iterative methods for incompressible flow problems 53 (1989) 393
Dean, E., R. Glowinski and C.H. Li, Supercomputer solutions of partial differential equation problems in computational fluid dynamics and in control 53 (1989) 401
Tezduyar, T.E. and J. Liou, Grouped element-by-element iteration schemes for incompressible flow computations 53 (1989) 441
Thyagaraja, A. and D.F. Fletcher, The nonhyperbolicity of multiphase flow equations: a nonlinear nonproblem? 56 (1989/1990) 115

13. Geophysics

Navarra, A., An application of GMRES to indefinite linear problems in meteorology 53 (1989) 321

14. Graphics

Myers, D.R., HEP graphics: standard and portability versus performance and cost 57 (1989) 176
Corden, M.J., C.H. Georiopoulos and M.E. Mermikides, Implementation of the ALEPH detector simulation code using UNIX with on-line graphics display 57 (1989) 260
Brun, R., O. Couet, C.E. Vandoni and P. Zanarini, PAW, a general-purpose portable software tool for data analysis and presentation 57 (1989) 432
Johnstad, H., PAW at Fermilab 57 (1989) 438
Schilling, P.K., Graphics at DESY 57 (1989) 443
Schaile, O., DZDISP: a graphics tool to interact with ZEBRA data structures 57 (1989) 528

15. Laser physics

Tran, T.M. and J.S. Wurtele, TDA – a three-dimensional axisymmetric code for free-electron-laser (FEL) simulation 54 (1989) 263

16. Molecular physics

16.1. Structure and properties

Zhu, S.-B. and G.W. Robinson, Molecular dynamics study of liquid carbon dioxide 52 (1988/1989) 317
Moncrieff, D., D.J. Baker and S. Wilson, Diagrammatic many-body perturbation expansion for atoms and molecules. VI 55 (1989) 31
Wilson, S., Universal basis sets and Cholesky decomposition of the two-electron integral matrix 58 (1990) 71

16.2. Spectra

Gil, T.J., C.L. Winstead and P.W. Langhoff, Lanczos methods for Hamiltonian spectra: Hilbert-space approximations to interaction-prepared states 53 (1989) 123

Molecular physics — *Spectra (continued)*

Carter, S., P. Rosmus, N.C. Handy, S. Miller, J. Tennyson and B.T. Sutcliffe, Benchmark calculations of first principles rotational and ro-vibrational line strenghts 55 (1989) 71
Friedman, R.S., M.J. Jamieson and S.C. Preston, On the numerical solution of coupled eigenvalue differential equations arising in molecular spectroscopy 58 (1990) 17

16.3. Molecular vibrations
Johnson, B.R., Semiclassical vibrational eigenvalues of H_2O and SO_2 by the adiabatic switching method 51 (1988) 1
Noid, D.W., S.K. Knudson and B.G. Sumpter, Exact semiclassical calculation of eigenvalues for multidimensional systems using SOS 51 (1988) 11
vande Linde, S.R. and W.L. Hase, Dynamics of ion–molecule recombination. IV. $Li^+ + (CH_3)_2O$ association 51 (1988) 17
Bačić, Z., R.M. Whitnell, D. Brown and J.C. Light, Localized representations for large amplitude molecular vibrations 51 (1988) 35
Carter, S. and N.C. Handy, A variational method for the determination of the vibrational (J=0) energy levels of acetylene, using a Hamiltonian in internal coordinates 51 (1988) 49
Fleming, P.R. and J.S. Hutchinson, Representation of the Hamiltonian matrix in non-local coordinates for an acetylene bond-mode model 51 (1988) 59
Sutcliffe, B.T., S. Miller and J. Tennyson, An effective computational approach to the calculation of the vibration–rotation spectra of triatomic molecules 51 (1988) 73
Carter, S., P. Rosmus, N.C. Handy, S. Miller, J. Tennyson and B.T. Sutcliffe, Benchmark calculations of first principles rotational and ro-vibrational line strenghts 55 (1989) 71

16.4. Experimental analysis
Carter, S., P. Rosmus, N.C. Handy, S. Miller, J. Tennyson and B.T. Sutcliffe, Benchmark calculations of first principles rotational and ro-vibrational line strenghts 55 (1989) 71

16.8. Rearrangement collisions, charge transfer and chemical reactions
vande Linde, S.R. and W.L. Hase, Dynamics of ion–molecule recombination. IV. $Li^+ + (CH_3)_2O$ association 51 (1988) 17
Ohsaki, A., H. Nakamura and S.C. Park, On the evaluation of cross section and rate constant of atom–diatom reactions in the sudden and adiabatic approximations 52 (1988/1989) 291
Kress, J.D., G.A. Parker, R. T Pack, B.J. Archer and W.A. Cook, Comparison of Lanczos and subspace iterations for hyperspherical reaction path calculations 53 (1989) 91
Kress, J.D., S.B. Woodruff, G.A. Parker and R. T Pack, Some strategies for enhancing the performance of the block Lanczos method 53 (1989) 109
Duneczky, C., R.E. Wyatt, D. Chatfield, K. Haug, D.W. Schwenke, D.G. Truhlar, Y. Sun and D.J. Kouri, Iterative methods for solving the nonsparse equations of quantum mechanical reactive scattering 53 (1989) 357
Dubey, I.P. and S.K. Upadhyay, A trivariate interpolation method developed on the basis of Akima's bivariate interpolation procedure 54 (1989) 23
Gorecki, J. and J. Gryko, Molecular dynamics simulation of a chemical reaction 54 (1989) 245

16.9. Classical methods
Moncrieff, D., D.J. Baker and S. Wilson, Diagrammatic many-body perturbation expansion for atoms and molecules. VI 55 (1989) 31

Molecular physics — *Classical methods (continued)*

Amini, M. and D. Fincham, Evaluation of temperature in molecular dynamics simulation 56 (1989/1990) 313

16.10. Wave functions and integrals
Cioslowski, J., Principles of ab initio SCF calculations with minimal storage requirements 53 (1989) 117
Grest, G.S., B. Dünweg and K. Kremer, Vectorized link cell FORTRAN code for molecular dynamics simulaton for a large number of particles 55 (1989) 269

16.11. Polymers
Forrest, B.M., A. Baumgärtner and D.W. Heermann, Parallel simulation of dense two-dimensional polymer systems 59 (1990) 455

18. Optics

Pantelic, D.V. and Z.D. Janevski, A new kind of splines and their use for fast ray-tracing in reflective cavities 55 (1989) 5

19. Plasma physics

19.3. Collisionless plasmas
Nunn, D., The numerical simulation of VLF nonlinear wave–particle interactions in collision-free plasmas using the Vlasov hybrid simulation technique 60 (1990) 1

19.6. Equilibrium and stability
Varias, A., An extension of the HERA code to flux coordinate equilibria 52 (1988/1989) 167
Turnbull, A.D. and F. Troyon, Two variational forms of the MHD ballooning equation 52 (1988/1989) 303
Parker, R.D. and R.L. Dewar, 2-D, nonlinear spectral simulation of reconnective transitions on a periodic, planar current sheet with (1) smooth and (2) corrugated conducting wall boundary conditions with flow 59 (1990) 1
Aly, J.J., Quasi-static evolution of a force-free magnetic field 59 (1990) 13
Goedbloed, J.P., Stability of solar coronal loops 59 (1990) 39
de Bruyne, P., M. Velli and A.W. Hood, The ideal MHD stability of line-tied coronal loops: a truncated Fourier series approach 59 (1990) 55
van der Linden, R.A.M., M. Goossens and W. Kerner, A combined finite element/Fourier series method for the numerical study of the stability of line-tied magnetic plasmas 59 (1990) 61
Poedts, S., M. Goossens and W. Kerner, Numerical simulation of the stationary state of periodically driven coronal loops 59 (1990) 75

19.8. Kinetic models
Epperlein, E.M., G.J. Rickard and A.R. Bell, A code for the solution of the Vlasov–Fokker–Planck equation in 1-D or 2-D 52 (1988/1989) 7
Parker, R.D. and R.L. Dewar, 2-D, nonlinear spectral simulation of reconnective transitions on a periodic, planar current sheet with (1) smooth and (2) corrugated conducting wall boundary conditions with flow 59 (1990) 1

Plasma physics — *Kinetic models (continued)*

Aly, J.J., Quasi-static evolution of a force-free magnetic field 59 (1990) 13
Schnack, D.D., Z. Mikić, D.C. Barnes and G. van Hoven, Magnetohydrodynamic simulation of coronal magnetic fields 59 (1990) 21
Poedts, S., M. Goossens and W. Kerner, Temporal evolution of resonant absorption in solar coronal loops 59 (1990) 95
Toomre, J., N. Brummell, F. Cattaneo and N.E. Hurlburt, Three-dimensional compressible convection at low Prandtl numbers 59 (1990) 105
Nordlund, Å. and R.F. Stein, 3-D simulations of solar and stellar convection and magnetoconvection 59 (1990) 119
Hermans, D., W. Kerner and M. Goossens, Linearly overstable magnetic convection in 1D compressible and non-uniform plasmas 59 (1990) 127
Lin, Y., Numerical calculation of force-free magnetic field for solar active regions and its application to prediction of solar flares 59 (1990) 139
Geertsema, G.T. and A. Achterberg, MHD turbulence and accretion disks 59 (1990) 145
Lee, L.C., Time-dependent magnetic reconnection: two- and three-dimensional MHD simulations 59 (1990) 163
Scholer, M., T. Terasawa and F. Jamitzky, Reconnection and fluctuations in compressible MHD: a comparison of different numerical methods 59 (1990) 175
Otto, A., 3D resistive MHD computations of magnetospheric physics 59 (1990) 185

19.10. Magnetohydrodynamics
Varias, A., An extension of the HERA code to flux coordinate equilibria 52 (1988/1989) 167
Turnbull, A.D. and F. Troyon, Two variational forms of the MHD ballooning equation 52 (1988/1989) 303
Schnack, D.D., Z. Mikić, D.C. Barnes and G. van Hoven, Magnetohydrodynamic simulation of coronal magnetic fields 59 (1990) 21

19.11. Transport
Hogeweij, G.M.D., G. Hordósy and N.J. Lopes Cardozo, Heat transport analysis with error calculation 59 (1990) 245

19.12. Space and astrophysical plasmas
Parker, R.D. and R.L. Dewar, 2-D, nonlinear spectral simulation of reconnective transitions on a periodic, planar current sheet with (1) smooth and (2) corrugated conducting wall boundary conditions with flow 59 (1990) 1
Schnack, D.D., Z. Mikić, D.C. Barnes and G. van Hoven, Magnetohydrodynamic simulation of coronal magnetic fields 59 (1990) 21
Goedbloed, J.P., Stability of solar coronal loops 59 (1990) 39
de Bruyne, P., M. Velli and A.W. Hood, The ideal MHD stability of line-tied coronal loops: a truncated Fourier series approach 59 (1990) 55
van der Linden, R.A.M., M. Goossens and W. Kerner, A combined finite element/Fourier series method for the numerical study of the stability of line-tied magnetic plasmas 59 (1990) 61
Poedts, S., M. Goossens and W. Kerner, Numerical simulation of the stationary state of periodically driven coronal loops 59 (1990) 75
Krauss-Varban, D., Some aspects of finite element calculations applied to ULF magnetospheric cavity waves 59 (1990) 85

Plasma physics — *Space and astrophysical plasmas (continued)*

Poedts, S., M. Goossens and W. Kerner, Temporal evolution of resonant absorption in solar coronal loops 59 (1990) 95
Toomre, J., N. Brummell, F. Cattaneo and N.E. Hurlburt, Three-dimensional compressible convection at low Prandtl numbers 59 (1990) 105
Nordlund, Å. and R.F. Stein, 3-D simulations of solar and stellar convection and magnetoconvection 59 (1990) 119
Hermans, D., W. Kerner and M. Goossens, Linearly overstable magnetic convection in 1D compressible and non-uniform plasmas 59 (1990) 127
Lin, Y., Numerical calculation of force-free magnetic field for solar active regions and its application to prediction of solar flares 59 (1990) 139
Geertsema, G.T. and A. Achterberg, MHD turbulence and accretion disks 59 (1990) 145
Velli, M., R. Grappin and A. Mangeney, Solar wind expansion effects on the evolution of hydromagnetic turbulence in the interplanetary medium 59 (1990) 153
Lee, L.C., Time-dependent magnetic reconnection: two- and three-dimensional MHD simulations 59 (1990) 163
Scholer, M., T. Terasawa and F. Jamitzky, Reconnection and fluctuations in compressible MHD: a comparison of different numerical methods 59 (1990) 175
Otto, A., 3D resistive MHD computations of magnetospheric physics 59 (1990) 185
Reale, F., F. Brugè, G. Peres, S.L. Fornili, V. Martorana and S. Serio, One-dimensional hydrodynamic modeling of coronal plasmas on transputer arrays 60 (1990) 201

19.13. Wave–plasma interactions
Tran, T.M. and J.S. Wurtele, TDA – a three-dimensional axisymmetric code for free-electron-laser (FEL) simulation 54 (1989) 263
Shoucri, M., I. Shkarofsky, V. Fuchs, K. Kupfer, A. Bers and S. Luckhardt, A quasilinear Fokker–Planck code for the numerical solution of the lower-hybrid current-drive problem in the presence of electron cyclotron heating 55 (1989) 253
Krauss-Varban, D., Some aspects of finite element calculations applied to ULF magnetospheric cavity waves 59 (1990) 85
Velli, M., R. Grappin and A. Mangeney, Solar wind expansion effects on the evolution of hydromagnetic turbulence in the interplanetary medium 59 (1990) 153
Dyachenko, A.J., A.N. Pushkarev, A.M. Rubenchik and V.F. Shvets, A particle model for three-dimensional Langmuir collapse simulation 60 (1990) 239

22. Reactor systems

Mohanakrishnan, P., Use of albedo for neutron reflector regions in reactor core 3D simulations 55 (1989) 311

23. Statistical physics and thermodynamics

Lee, M.H., Frequency moment sum rules, recurrence relations and continued fractions in nonequilibrium statistical mechanics 53 (1989) 147
Cohen, R., S.-Y. Lin and M. Luskin, Relaxation and gradient methods for molecular orientation in liquid crystals 53 (1989) 455
Burkitt, A. N. and D.W. Heermann, Parallelization of a cluster algorithm 54 (1989) 201

Statistical physics and thermodynamics *(continued)*

Gomes, M.A.F. and G.L. Vasconcelos, Fragmentation dynamics in fractal and Euclidean systems 54 (1989) 257
Pichon, B., Numerical calculation of the generalized Fermi–Dirac integrals 55 (1989) 127
Amar, J.G. and F. Sullivan, Monte Carlo simulaton of domain growth in the kinetic Ising model on the connection machine 55 (1989) 287
Aiello, G.R., M. Budinich and E. Milotti, A parallel processor for the simulation of Ising spin systems 56 (1989/1990) 141

Author index to volumes 51–60

Abdelmalek, N.N., A program for the solution of ill-posed linear systems arising from the discretization of the Fredholm integral equation of the first kind 58 (1990) 285
Abe, F., see Y. Karita 57 (1989) 455
Abril, I., ALACANT: modeling of glow discharge sputtering systems 51 (1988) 413
Achterberg, A., see G.T. Geertsema 59 (1990) 145
Adye, T., T. Berners-Lee, S. Brobecker, A. Camacho, D. Davids, F. Harris and P. Lorenz, Online communications in the DELPHI experiment 57 (1989) 466
Agogino, A., see D.E. Hall 57 (1989) 499
Agrón, E., see H.C. Elman 53 (1989) 253
Aiello, G.R., M. Budinich and E. Milotti, Hardware implementation of a GFSR pseudo-random number generator 56 (1989) 135
Aiello, G.R., M. Budinich and E. Milotti, A parallel processor for the simulation of Ising spin systems 56 (1989) 141
Akai, H., see N. Stefanou 60 (1990) 231
Albers, R.C., see J.M. MacLaren 60 (1990) 365
Aldea, N. and E. Indrea, Fourier analysis of EXAFS and XANES data – a self-contained Fortran program-package – the third version 60 (1990) 145
Aldea, N. and E. Indrea, XRLINE, a program to evaluate the crystallite size of supported metal catalysts by single X-ray profile Fourier analysis 60 (1990) 155
Aldea, N. and E. Indrea, Fourier analysis of EXAFS data – a self-contained FORTRAN program-package – a second version 51 (1988) 451
Alexander, J.M., see R.L.McGrath 59 (1990) 507
Allan, R.J., L. Heck and S. Zurek, Parallel Fortran in scientific computing: a new occam harness called Fortnet 59 (1990) 325
Allard, N.F., see V.K. Lan 55 (1989) 303
Allegretto, W., see K.H. Teo 59 (1990) 277
Allouche, A. and G. Pouzard, Computer simulation of FT-NMR multiple pulse experiment 54 (1989) 171
Álvarez Collado, J.R., J. Fernández Rico, R. López, M. Paniagua and G. Ramírez, Rotation of real spherical harmonics 52 (1989) 323
Alvisi, L. and R. Odorico, A rule based approach for pattern recognition in planar geometric figures 51 (1988) 443
Aly, J.J., Quasi-static evolution of a force-free magnetic field 59 (1990) 13
Amar, J.G. and F. Sullivan, Monte Carlo simulaton of domain growth in the kinetic Ising model on the connection machine 55 (1989) 287
Amini, M. and D. Fincham, Evaluation of temperature in molecular dynamics simulation 56 (1990) 313
Anderson, D.V., see Y.-M. Chen 55 (1989) 359
Anderson, D.V., A.E. Koniges and D.E. Schumaker, CPDES2: a preconditioned conjugate gradient solver for linear asymmetric matrix equations arising from coupled partial differential equations in two dimensions 51 (1988) 391

Anderson, D.V., A.E. Koniges and D.E. Schumaker, CPDES3: a preconditioned conjugate gradient solver for linear asymmetric matrix equations arising from coupled partial differential equations in three dimensions 51 (1988) 405
Anderson, M.D., see D.R. Quarrie 57 (1989) 325
Appert, K., see X. Llobet 59 (1990) 199
Archer, B.J., see J.D. Kress 53 (1989) 91
Arnold, A. and N. Mauser, An efficient method of bookkeeping next neighbours in molecular dynamics simulations 59 (1990) 267
Auguin, M., see A. Jejcic 57 (1989) 507
Avery, P. and A. White, UFMULTI: a new parallel processing software system for HEP 57 (1989) 422
Avico, N., P. Bacilieri, S. Cabasino, N. Cabibbo, L.A. Fernández, G. Fiorentini, A. Lai, M.P. Lombardo, E. Marinari, F. Marzano, P. Paolucci, G. Parisi, J. Pech, F. Rapuano, E. Remiddi, R. Sarno, G. Salina, A. Tarancón, G.M. Todesco, M. Torelli, R. Tripiccione and W. Tross, From APE to APE-100: from 1 to 100 Gflops in lattice gauge theory simulations 57 (1989) 285
Ayala, C. and M. Baig, Generation and analysis of high order strong coupling series for SU(2) lattice gauge theory 58 (1990) 199
Aydinli, A., see C. Topaçli 52 (1988) 65

Babalievski, F. and O. Peshev, An algorithm to construct quasilattices and study percolation on them 60 (1990) 27
Bachmann, Chr., see M.-M. Rohmer 60 (1990) 127
Bačić, Z., R.M. Whitnell, D. Brown and J.C. Light, Localized representations for large amplitude molecular vibrations 51 (1988) 35
Bacilieri, P., see N. Avico 57 (1989) 285
Bacilieri, P., B. Caccia, R. Cardarelli, G.P. Carlucci, O. Ciaffoni, M. Coli, G. Di Pirro, M.L. Ferrer, A. Ghiselli, A. Martini, G. Medici, G. Mirabelli, E. Pace, R. Santonico, L. Trasatti, E. Valente and S. Valentini, STARNET, a fiber optic metropolitan area network with centralized control 57 (1989) 459
Baig, M., see C. Ayala 58 (1990) 199
Baillie, C.F., D.A. Johnston and R.D. Williams, Computational aspects of simulating dynamically triangulated random surfaces 58 (1990) 105
Baker, D.J., see D. Moncrieff 55 (1989) 31
Bank, R.E., W.M. Coughran Jr, M.A. Driscoll, R.K. Smith and W. Fichtner, Iterative methods in semiconductor device simulation 53 (1989) 201
Banno, Y., see Y. Karita 57 (1989) 455
Barao, F., C. Gaspar, Ph. Gavillet, J.Ph. Laugier, B. Martin, P. Moreau, M. Pimenta, M. Reis and J. Varela, DELPHI's central partition 57 (1989) 358
Bardin, D.Yu., M.S. Bilenky, T. Riemann, M. Sachwitz and H. Vogt, DIZET – electroweak one-loop corrections for $e^+ + e^- \to f^+ + f^-$ around the Z peak 59 (1990) 303
Barlow, R. and P. Hinde, Fitting the ratio of two distributions 56 (1990) 325
Barnes, D.C., see D.D. Schnack 59 (1990) 21
Baumgärtner, A., see B.M. Forrest 59 (1990) 455
Bell, A.R., see E.M. Epperlein 52 (1988) 7
Bénard, M., see R. Ernenwein 58 (1990) 305
Bénard, M., see M.-M. Rohmer 60 (1990) 127
Berg, B.A., see C. Vohwinkel 51 (1988) 331
Berners-Lee, T., see T. Adye 57 (1989) 466

Berny, L. and H. Frese, Automatic generation of software detailed design documents for C language programs 57 (1989) 476
Berretti, A. and A.D. Sokal, Vectorized program for Monte Carlo simulation of self-avoiding walks 58 (1990) 1
Berry, R.S., see D.M. Leitner 51 (1988) 207
Bers, A., see M. Shoucri 55 (1989) 253
Bertrand, P., see B. Izrar 52 (1989) 375
Bertsch, G., An RPA program for jellium spheres 60 (1990) 247
Bhadra, S., see ZEUS CDAQ Collaboration 57 (1989) 321
Bhattacharya, R., see S. Bhowmick 54 (1989) 31
Bhattacharya, R., D. Roy and S. Bhowmick, On the regularity of the Levin u-transform 55 (1989) 297
Bhowmick, S., R. Bhattacharya and D. Roy, Iterations of convergence accelerating nonlinear transforms 54 (1989) 31
Bhowmick, S., see R. Bhattacharya 55 (1989) 297
Bialolenker, G., see Z. Burshtein 51 (1988) 349
Biddulph, P. and G. Thompson, Improved modelling of independent parton hadronization 54 (1989) 13
Biersack, J.P., see W. Möller 51 (1988) 355
Bilenky, M.S., see D.Yu. Bardin 59 (1990) 303
Billing, G.D., Erratum notice. Rate constants for vibrational transitions in diatom–diatom collisions (AATY – CPC 44 (1987) 121) 52 (1989) 443
Billoir, P., Progressive track recognition with a Kalman-like fitting procedure 57 (1989) 390
Bizeau, C., A. Bogaerts, R.W. Dobinson, D.R.N. Jeffery, W. Lu, C. Parkman and Y. Perrin, The use and possible abuse of transputer links 57 (1989) 301
Blaha, P., K. Schwarz, P. Sorantin and S.B. Trickey, Full-potential linearized augmented plane wave programs for crystalline systems 59 (1990) 399
Blair-Fish, J., see S.P. Booth 57 (1989) 101
Blobel, V., From DST to publication 57 (1989) 148
Bock, R.K., Bringing together high energy physicist and computer scientist. A summary of the Oxford conference on Computing in High Energy Physics 57 (1989) 1
Boeri, F., see A. Jejcic 57 (1989) 507
Bogaerts, A., see C. Bizeau 57 (1989) 301
Böhm, M., see J. Küblbeck 60 (1990) 165
Boissat, C., see D.M. Sendall 57 (1989) 343
Boissat, C., R. Jones and G. Mornacchi, The model human interface 57 (1989) 512
Bok, J., see J. Horáček 59 (1990) 319
Boley, D., R. Maier and J. Kim, A parallel QR algorithm for the nonsymmetric eigenvalue problem 53 (1989) 61
Bondeson, A., see X. Llobet 59 (1990) 199
Bonissent, A. and F. Etienne, Artificial intelligence steering for the interactive analysis of a high energy physics experiment 57 (1989) 447
Booth, A.W., J.T. Carroll, R. Forster, G. Goeransson, L. Gustafsson and N. Ho, A knowledge-based approach to network and module diagnosis 57 (1989) 332
Booth, S.P., K.C. Bowler, D.J. Candlin, R.D. Kenway, B.J. Pendleton, A.M. Thornton, D.J. Wallace, J. Blair-Fish and D. Roweth, Large scale applications of transputers in HEP: the Edinburgh Concurrent Supercomputer Project 57 (1989) 101
Booth, S.P., R.W. Dobinson, D.R.N. Jeffery, W. Lu, K.M. Storr and A.M. Thornton, An evaluation of the Meiko computing surface for HEP Fortran farming 57 (1989) 486
Bowler, K.C., see S.P. Booth 57 (1989) 101

Bowman, J.M., see A. Wierzbicki 51 (1988) 225
Bozzoli, W., see D.M. Sendall 57 (1989) 343
Brecht, S.H. and J.R. Ferrante, Vortex-in-cell calculations in three dimensions 58 (1990) 25
Briggs, D., T. Glanzman, P. Grosse-Wiesmann, J. Tinsman, S. Holmgren and M.W. Schaad, A calorimeter software trigger for the Mark II detector at SLC 57 (1989) 273
Brobecker, S., see T. Adye 57 (1989) 466
Brody, T.A., Random-number generation for parallel processors 56 (1989) 147
Brown, D., see Z. Bačić 51 (1988) 35
Brugè, F. and S.L. Fornili, Concurrent molecular dynamics simulation of spinodal phase transition on transputer arrays 60 (1990) 31
Brugè, F. and S.L. Fornili, A distributed dynamic load balancer and its implementation on multi-transputer systems for molecular dynamics simulation 60 (1990) 39
Brugè, F., see F. Reale 60 (1990) 201
Brummell, N., see J. Toomre 59 (1990) 105
Brun, M., R. Brun and A.A. Rademakers, CMZ – a source code management system 57 (1989) 235
Brun, R., see M. Brun 57 (1989) 235
Brun, R., see M.J. Corden 57 (1989) 268
Brun, R., O. Couet, C.E. Vandoni and P. Zanarini, PAW, a general-purpose portable software tool for data analysis and presentation 57 (1989) 432
Brussino, G., see S. Foresti 53 (1989) 349
Bruyant, F., see M.J. Corden 57 (1989) 268
Budinich, M. and S. Esquivel, An efficient algorithm for charged tracks pattern recognition 58 (1990) 83
Budinich, M., see G.R. Aiello 56 (1989) 135
Budinich, M., see G.R. Aiello 56 (1989) 141
Burkimsher, P., see D.M. Sendall 57 (1989) 343
Burkitt, A. N. and D.W. Heermann, Parallelization of a cluster algorithm 54 (1989) 201
Burkitt, A.N. and A.C. Irving, Inversion of the fermion matrix and the equivalence of the conjugate gradient and Lanczos algorithms 59 (1990) 447
Burshtein, Z., D. Levron and G. Bialolenker, Thermally induced refractive index gradients in a dye-laser cell 51 (1988) 349
Butler, J.W., A proposed new approach to the expansion of mathematical functions 54 (1989) 221

Cabasino, S., see N. Avico 57 (1989) 285
Cabibbo, N., see N. Avico 57 (1989) 285
Caccia, B., see P. Bacilieri 57 (1989) 459
Calabuig, B., see R. Carbó 55 (1989) 117
Calabuig, B., see R. Carbó 52 (1989) 345
Camacho, A., see T. Adye 57 (1989) 466
Candlin, D.J., see S.P. Booth 57 (1989) 101
Capotondi, A., V. Sonnad and S. Chin, Parallel solution of the shallow water equations using an explicit finite difference algorithm 52 (1989) 195
Carbó, R. and B. Calabuig, MOLSIMIL-88: molecular similarity calculations using a CNDO-like approximation 55 (1989) 117
Carbó, R. and B. Calabuig, ARIADNE-88: an ab initio monoconfigurational closed and open shell direct electronic energy calculation using elementary Jacobi rotations 52 (1989) 345
Cardarelli, R., see P. Bacilieri 57 (1989) 459
Carlucci, G.P., see P. Bacilieri 57 (1989) 459
Carroll, J.T., see A.W. Booth 57 (1989) 332

Carter, J.M., M.G. Green and T. Medcalf, Transparent use of transputers for off-line computation 57 (1989) 495
Carter, P.A., A fast vectorized program for the Cyber 205 to calculate the partition function of the 3-D Ising model 54 (1989) 103
Carter, S. and N.C. Handy, A variational method for the determination of the vibrational (J=0) energy levels of acetylene, using a Hamiltonian in internal coordinates 51 (1988) 49
Carter, S., P. Rosmus, N.C. Handy, S. Miller, J. Tennyson and B.T. Sutcliffe, Benchmark calculations of first principles rotational and ro-vibrational line strenghts 55 (1989) 71
Caruso, A., see V.A. Pais 58 (1990) 55
Cash, J.R., A.D. Raptis and T.E. Simos, A Fortran program for the numerical integration of the one-dimensional Schrödinger equation using exponential and Bessel fitting methods 56 (1990) 391
Castaños, O., J.P. Draayer and Y. Leschber, Quantum rotor and its SU(3) realization 52 (1988) 71
Castellano, M., C. Favuzzi, N. Giglietto, E. Nappi and P. Spinelli, A Monte Carlo program to design a transition radiation detector 51 (1988) 431
Catchen, G.L., Perturbation functions: PAC probe nuclei, I=2, 5/2, and 3 55 (1989) 85
Cattaneo, F., see J. Toomre 59 (1990) 105
Cecchini, R. and M. Tarlini, Symbolic superalgebra manipulations using COMMON LISP 60 (1990) 265
Cecchini, R. and M. Tarlini, Symbolic Lie algebras manipulations using COMMON LISP 52 (1989) 283
Chan, C.K., see S.C. Wang 60 (1990) 181
Chan, C.S., see A.C. Saulys 57 (1989) 353
Chan, T.F., C-C.J. Kuo and C. Tong, Parallel elliptic preconditioners: Fourier analysis and performance on the connection machine 53 (1989) 237
Chandra, U., G. Riccardi, J. Vagi, J.-L. Dekeyser and F. Hannedouche, Aftran: array Fortran programming language 57 (1989) 263
Chandross, R.J., see S.E. Sobottka 51 (1988) 295
Chang, B.H., J.S. Lee and D. Secrest, Rotation–vibration eigenvalues and vectors 51 (1988) 195
Chao, H.Z., see A. Greenbaum 53 (1989) 295
Chassapis, C.S., D.G. Papageorgiou and I.E. Lagaris, MCL – optimization oriented programming language 52 (1989) 223
Chassapis, C.S., see D.G. Papageorgiou 52 (1989) 241
Chatfield, D., see C. Duneczky 53 (1989) 357
Chen, B.-Q., see J.-L. Ping 52 (1989) 355
Chen, H.-S., Fast simulation of showers in inhomogeneous media 57 (1989) 375
Chen, J.-Q., see J.-L. Ping 52 (1989) 355
Chen, Q. and B.D. Mestel, Taylor–Chirikov map package 51 (1988) 463
Chen, Y.-M., A.E. Koniges and D.V. Anderson, ILUBCG2-11: Solution of 11-banded nonsymmetric linear equation systems by a preconditioned biconjugate gradient routine 55 (1989) 359
Chialvo, A.A. and P.G. Debenedetti, On the use of the Verlet neighbor list in molecular dynamics 60 (1990) 215
Child, M.S., see L. Halonen 51 (1988) 173
Chilingarian, A.A., Statistical decisions uncer nonparametric a priory information 54 (1989) 381
Chin, S., see A. Capotondi 52 (1989) 195
Chipaux, R., MOSPLV, a program for simulation of complex Mössbauer spectra in polycrystalline samples 60 (1990) 405
Chiu, C.B., see K. Srinivasa Rao 56 (1989) 231
Ciaffoni, O., see P. Bacilieri 57 (1989) 459
Cioslowski, J., Principles of ab initio SCF calculations with minimal storage requirements 53 (1989) 117

Cittolin, S., M. Demoulin, A. Fucci, W. Haynes, B. Martin, J.P. Porte and P. Sphicas, The third level trigger and output event unit of the UA1 data-acquisition system 57 (1989) 370
Čížek, J., see F. Vinette 52 (1988) 35
Čížek, J., see E.J. Weniger 59 (1990) 471
Clark, P., see S. Fraga 52 (1989) 445
Climenhaga, J.D., see S. Fraga 52 (1989) 445
Cohen, R., S.-Y. Lin and M. Luskin, Relaxation and gradient methods for molecular orientation in liquid crystals 53 (1989) 455
Colangelo, P., L. Cosmai and E. Scrimieri, Computer simulation of gauge theories on a lattice with improved rotational symmetry 54 (1989) 235
Coli, M., see P. Bacilieri 57 (1989) 459
Collins, L.A., see B.I. Schneider 53 (1989) 381
Cook, W.A., see J.D. Kress 53 (1989) 91
Corden, M.J., C.H. Georiopoulos and M.E. Mermikides, Implementation of the ALEPH detector simulation code using UNIX with on-line graphics display 57 (1989) 260
Corden, M.J., C.H. Georgiopoulos, R. Brun, F. Bruyant and J.-L. Dekeyser, Progress towards a vectorized version of the GEANT Monte Carlo program 57 (1989) 268
Cornick, G.G., see S.E. Sobottka 51 (1988) 295
Cosmai, L., see P. Colangelo 54 (1989) 235
Couet, O., see R. Brun 57 (1989) 432
Coughran Jr, W.M., see R.E. Bank 53 (1989) 201
Crampin, S., see J.M. MacLaren 60 (1990) 365
Creutz, M., P. Mitra and K.J.M. Moriarty, Erratum notice. A fast algorithm for investigations on the three-dimensional Ising model (ACCP – CPC 33(1984)361) 55 (1989) 251
Crombie, M., see ZEUS CDAQ Collaboration 57 (1989) 321
Cullum, J., W. Kerner and R. Willoughby, A generalized nonsymmetric Lanczos procedure 53 (1989) 19
Cutts, D., J.S. Hoftun, C.R. Johnson and R.T. Zeller, Data acquisition at D0 57 (1989) 339
Cutts, D., J.S. Hoftun, A. Sornborger, C.R. Johnson and R.T. Zeller, Neural networks for event filtering at D0 57 (1989) 478
Cybenko, G., Book review 60 (1990) 417

Da Rocha, A.R.C. and S. Palermo, Software quality assurance in HEP 57 (1989) 524
Damarowsky, M. and G.H. Guthöhrlein, Spectral analysis without knowledge of the line shape function by use of a new numerical procedure 52 (1989) 187
Das, P., Computer programs for the Boltzmann collision matrix elements 55 (1989) 177
Dasso, C.H., see J. Fernández-Niello 54 (1989) 409
Davidenko, A.M., see V.P. Voevodin 57 (1989) 532
Davids, D., see T. Adye 57 (1989) 466
Davidson, D.B. and D.A. McNamara, A boundary element program package for electromagnetic excitation of conducting bodies of revolution by an asymmetrical slot 56 (1989) 249
Davidson, E.R., Super-matrix methods 53 (1989) 49
Davie, K. and R. Wallace, TITLE – solution of bound state single variable eigenproblems by the extended renormalized Numerov method 51 (1988) 217
Davie, K. and R. Wallace, Orthogonal generalized Jacobi cooridinates for N-body systems 55 (1989) 463
Davis, E.D., see U. Hartmann 54 (1989) 353
Day, C.T., see D.R. Quarrie 57 (1989) 325

De Angelis, A., A class of N-dimensional probability density functions suitable for random generation 52 (1988) 61
De Bruyne, P., M. Velli and A.W. Hood, The ideal MHD stability of line-tied coronal loops: a truncated Fourier series approach 59 (1990) 55
De Leon, N., see M.A. Mehta 51 (1988) 115
Dean, E., R. Glowinski and C.H. Li, Supercomputer solutions of partial differential equation problems in computational fluid dynamics and in control 53 (1989) 401
Debenedetti, P.G., see A.A. Chialvo 60 (1990) 215
Decker, K., Numerical investigation of a coarse-to-fine transormation for multigrid Monte Carlo updating 54 (1989) 1
Defranceschi, M. and M. Sarrazin, Numerical integration over a spherical shell 52 (1989) 409
Degrand, T.A. and P. Rossi, Conditioning techniques for dynamical fermions 60 (1990) 211
DeGrand, Th.A., A conditioning technique for matrix inversion for Wilson fermions 52 (1988) 161
Dekeyser, J.-L., see U. Chandra 57 (1989) 263
Dekeyser, J.-L., see M.J. Corden 57 (1989) 268
Delfino, M., E. Fernández, S. Orteu and A. Pacheco, The ALEPH event reconstruction faciltity: parallel processing using workstations 57 (1989) 401
Delgado-Barrio, G., see D.M. Leitner 51 (1988) 207
Demoulin, M., see S. Cittolin 57 (1989) 370
Demuynck, J., see M.-M. Rohmer 60 (1990) 127
Denby, B. and S.L. Linn, Spatial pattern recognition in a high energy particle detector using a neural network algorithm 56 (1990) 293
Denby, B. and S.L. Linn, Status of HEP neural net research in the USA 57 (1989) 297
Denner, A., see J. Küblbeck 60 (1990) 165
Desalvo, A., G. Erbacci and R. Rosa, Vectorized code for the three-dimensional spin-exchange kinetic Ising model on cubic and diamond lattices 60 (1990) 305
Devoto, A., see C. Vohwinkel 51 (1988) 331
Dewar, R.L., see R.D. Parker 59 (1990) 1
DeYoung, P.A., see R.L.McGrath 59 (1990) 507
Di Gregorio, D.E., see A.J. Pacheco 52 (1988) 93
Di Pirro, G., see P. Bacilieri 57 (1989) 459
Ding, L. and E. Stenlund, A Monte Carlo program for nuclear collision geometry 59 (1990) 313
Dittus, F., Parallel processing with attached processors in a computer center environment 57 (1989) 395
Dobberstein, M.P., The calibration of the ZEUS forward drift chamber: an application for software with a high degree of parallelism 57 (1989) 483
Dobinson, R.W., see C. Bizeau 57 (1989) 301
Dobinson, R.W., see S.P. Booth 57 (1989) 486
Docherty, R., K.J. Roberts and E. Dowty, MORANG – a computer program designed to aid in the determinations of crystal morphology 51 (1988) 423
Dowty, E., see R. Docherty 51 (1988) 423
Draayer, J.P., see O. Castaños 52 (1988) 71
Draayer, J.P., see S.C. Park 55 (1989) 189
Draayer, J.P., Y. Leschber, S.C. Park and R. Lopez, Representations of U(3) in U(N) 56 (1989) 279
Dressel, B., see E. Ganssauge 55 (1989) 233
Driscoll, M.A., see R.E. Bank 53 (1989) 201
Drouffe, J.-M. and K.J.M. Moriarty, FORTRAN code for the three-dimensional Ising model on bcc and fcc lattices 52 (1989) 249

Dubey, I.P. and S.K. Upadhyay, A trivariate interpolation method developed on the basis of Akima's bivariate interpolation procedure 54 (1989) 23
Dubois, A. and A. Maquet, Subroutines for the evaluation of cross sections of one-photon radiative processes occurring in fast-electron H-atom collisions 60 (1990) 271
Duneczky, C., R.E. Wyatt, D. Chatfield, K. Haug, D.W. Schwenke, D.G. Truhlar, Y. Sun and D.J. Kouri, Iterative methods for solving the nonsparse equations of quantum mechanical reactive scattering 53 (1989) 357
Dünweg, B., see G.S. Grest 55 (1989) 269
Dupuis, M., J.D. Watts, H.O. Villar and G.J.B. Hurst, The general atomic and molecular electronic structure system HONDO: version 7.0 52 (1989) 415
Dyachenko, A.J., A.N. Pushkarev, A.M. Rubenchik and V.F. Shvets, A particle model for three-dimensional Langmuir collapse simulation 60 (1990) 239
Dyall, K.G., I.P. Grant, C.T. Johnson, F.A. Parpia and E.P. Plummer, Erratum notice. GRASP: a general purpose relativistic atomic program (ABJN – CPC 55(1989)425) 58 (1990) 345
Dyall, K.G., I.P. Grant, C.T. Johnson, F.A. Parpia and E.P. Plummer, GRASP: a general-purpose relativistic atomic structure program 55 (1989) 425

Ebisuzaki, T., see T. Ito 60 (1990) 187
Eckstein, W., see W. Möller 51 (1988) 355
Eissner, W., see V.K. Lan 55 (1989) 303
Ekimov, An.V., see V.P. Voevodin 57 (1989) 532
El Sharkawy, M.A., see A.R. Mohamed 59 (1990) 283
Elgue, M., see A.J. Pacheco 52 (1988) 93
Elmaani, A., see R.L.McGrath 59 (1990) 507
Elman, H.C. and E. Agrón, Ordering techniques for the preconditioned conjugate gradient method on parallel computers 53 (1989) 253
Epperlein, E.M., G.J. Rickard and A.R. Bell, A code for the solution of the Vlasov–Fokker–Planck equation in 1-D or 2-D 52 (1988) 7
Erbacci, G., see A. Desalvo 60 (1990) 305
Erhard, P., see ZEUS CDAQ Collaboration 57 (1989) 313
Ermler, W.C., H.C. Hsieh and L.B. Harding, Polyatomic surface fitting, vibrational–rotational analysis, expectation value and intensity program 51 (1988) 257
Ernenwein, R., see M.-M. Rohmer 60 (1990) 127
Ernenwein, R., M.-M. Rohmer and M. Bénard, A program system for ab initio MO calculations on vector and parallel processing machines. I. Evolution of integrals 58 (1990) 305
Esquivel, S., see M. Budinich 58 (1990) 83
Etchegoyen, A. and M.C. Etchegoyen, Microscopic inelastic form factors for heavy-ion reactions 55 (1989) 217
Etchegoyen, A., M.C. Etchegoyen and E.G. Vergini, Evaluation of Hamiltonian two-body matrix elements 55 (1989) 227
Etchegoyen, M.C., see A. Etchegoyen 55 (1989) 217
Etchegoyen, M.C., see A. Etchegoyen 55 (1989) 227
Ethvignot, T., see R.L.McGrath 59 (1990) 507
Etienne, F., see A. Bonissent 57 (1989) 447
Etkin, A., see A.C. Saulys 57 (1989) 353
Evans, M.W., On the isolation of possible artifacts due to cubic periodic boundary conditions 59 (1990) 495
Ezra, G.S., see L.E. Fried 51 (1988) 103

Falck, N.K., D. Graudenz and G. Kramer, Cross section for five-parton production in e^+e^- annihilation 56 (1989) 181
Fan, G.Y., Electron diffraction simulation on Micro-VAX II computers with the aid of an array processor 59 (1990) 429
Favuzzi, C., see M. Castellano 51 (1988) 431
Feix, M.R., see B. Izrar 52 (1989) 375
Fernández, E., see M. Delfino 57 (1989) 401
Fernandez, J.E., Monte Carlo computer simulation of the XRF intensity dependence on the propagation plane inclination 54 (1989) 211
Fernández, L.A., see N. Avico 57 (1989) 285
Fernández-Niello, J., C.H. Dasso and S. Landowne, CCDEF – a simplified coupled-channel code for fusion cross sections including static nuclear deformations 54 (1989) 409
Fernández Niello, J.O., see A.J. Pacheco 52 (1988) 93
Fernández Rico, J., see J.R. Álvarez Collado 52 (1989) 323
Ferrante, J.R., see S.H. Brecht 58 (1990) 25
Ferrer, M.L., see P. Bacilieri 57 (1989) 459
Feuer, G., see A. Nakamura 51 (1988) 301
Ficenec, J., see ZEUS CDAQ Collaboration 57 (1989) 313
Fichtner, W., see R.E. Bank 53 (1989) 201
Fijalkow, E., see B. Izrar 52 (1989) 375
Fincham, D., see A.R.C. Raine 55 (1989) 13
Fincham, D., see M. Amini 56 (1990) 313
Fincham, D., Bookreview 56 (1990) 409
Fiorentini, G., see N. Avico 57 (1989) 285
Fisher, S.M. and P. Palazzi, Using a data model from software design to data analysis: what have we learned 57 (1989) 169
Fleming, P.R. and J.S. Hutchinson, Representation of the Hamiltonian matrix in non-local coordinates for an acetylene bond-mode model 51 (1988) 59
Fletcher, D.F., see A. Thyagaraja 56 (1989) 115
Flieller, S., T.Node, industrial version of SuperNode 57 (1989) 492
Flower, D.R., see L. Heck 58 (1990) 169
Fluckiger, F., Overview of HEP wide area networking: producer perspective 57 (1989) 183
Foley, K.J., see A.C. Saulys 57 (1989) 353
Fontenelle, M.T. and J.A.C. Gallas, Constants of motion for the KdV and mKdV equations 60 (1990) 225
Foresti, S., G. Brussino, S. Hassanzadeh and V. Sonnad, Multilevel solution method for the p-version of finite elements 53 (1989) 349
Fornili, S.L., see F. Brugè 60 (1990) 31
Fornili, S.L., see F. Brugè 60 (1990) 39
Fornili, S.L., see F. Reale 60 (1990) 201
Forrest, B.M., A. Baumgärtner and D.W. Heermann, Parallel simulation of dense two-dimensional polymer systems 59 (1990) 455
Forster, R., see A.W. Booth 57 (1989) 332
Fortin, M., Some iterative methods for incompressible flow problems 53 (1989) 393
Fraga, S., M. Klobukowski, J. Muszynska, K.M.S. Saxena, J.A. Sordo, J.D. Climenhaga and P. Clark, Erratum notice. Research in atomic structure: a configuration interaction program with relativistic corrections (ABBB – CPC 47 (1987) 159) 52 (1989) 445
Frederick, J.H. and E.J. Heller, Quantum vibrational eigenstates from classical origins 51 (1988) 83

Frese, H., see L. Berny 57 (1989) 476
Friauf, R.J., see E.Y. Wu 59 (1990) 259
Fricke, B., see J. Meyer 54 (1989) 55
Fricke, B., see J. Meyer 55 (1989) 469
Fried, L.E. and G.S. Ezra, PERTURB: a program for calculating vibrational energies by generalized algebraic quantization 51 (1988) 103
Friedman, R.S., M.J. Jamieson and S.C. Preston, On the numerical solution of coupled eigenvalue differential equations arising in molecular spectroscopy 58 (1990) 17
Friedman, R.S. and M.J. Jamieson, Model potentials for multichannel eigenvalue problems 55 (1989) 137
Froese Fischer, C., see A. Hibbert 51 (1988) 285
Fucci, A., see S. Cittolin 57 (1989) 370
Fuchs, V., see M. Shoucri 55 (1989) 253

Gallas, J.A.C., see M.T. Fontenelle 60 (1990) 225
Gamble, J.N., Beyond Ethernet – future LAN's 57 (1989) 129
Ganssauge, E., B. Dressel, S. Hackel, H. Kallies, E. Koch, Ch. Müller, J.T. Rhee, W. Schulz and K. Ständecke, A track reconstruction program (TRP) for evaluation of nucleus–nucleus collisions in nuclear track emulsion chambers 55 (1989) 233
Gaspar, C., see F. Barao 57 (1989) 358
Gather, K., see ZEUS CDAQ Collaboration 57 (1989) 313
Gather, K.S., SASD-tools for program design 57 (1989) 29
Gausterer, H. and S. Sanielevici, Remarks on the numerical solution of Langevin equations on unitary group spaces 52 (1988) 43
Gavillet, Ph., see F. Barao 57 (1989) 358
Geertsema, G.T. and A. Achterberg, MHD turbulence and accretion disks 59 (1990) 145
Georgiopoulos, C.H., see M.J. Corden 57 (1989) 268
Georiopoulos, C.H. and M.E. Mermikides, Vectorized simulation of the response of a time projection chamber 57 (1989) 255
Georiopoulos, C.H., see M.J. Corden 57 (1989) 260
Gerber, R.B., see H. Romanowski 51 (1988) 161
Ghiselli, A., see P. Bacilieri 57 (1989) 459
Ghizzo, A., see B. Izrar 52 (1989) 375
Giglietto, N., see M. Castellano 51 (1988) 431
Gil, T.J., C.L. Winstead and P.W. Langhoff, Lanczos methods for Hamiltonian spectra: Hilbert-space approximations to interaction-prepared states 53 (1989) 123
Gils, H.J., D. Heck, J. Oehlschläger, G. Schatz, T. Thouw and A. Merkel, A multi-transputer system for parallel Monte Carlo simulation of extensive air showers 56 (1989) 105
Glanzman, T., see D. Briggs 57 (1989) 273
Glasser, A.H., see K. Smith 54 (1989) 391
Glasser, A.H. and K. Smith, POS – a 1D time-dependent H^+ ion source code 55 (1989) 409
Gleixner, H., see J. Schastok 54 (1989) 167
Glowinski, R., see E. Dean 53 (1989) 401
Godefroid, M.R., see A. Hibbert 51 (1988) 285
Goedbloed, J.P., Stability of solar coronal loops 59 (1990) 39
Goeransson, G., see D.R. Quarrie 57 (1989) 325
Goeransson, G., see A.W. Booth 57 (1989) 332
Gomes, M.A.F. and G.L. Vasconcelos, Fragmentation dynamics in fractal and Euclidean systems 54 (1989) 257

Góngora-T., A., see R.G. Stuart 56 (1990) 337
Goossens, M., see R.A.M. van der Linden 59 (1990) 61
Goossens, M., see S. Poedts 59 (1990) 75
Goossens, M., see S. Poedts 59 (1990) 95
Goossens, M., see D. Hermans 59 (1990) 127
Gordon, M.S., see R.L.McGrath 59 (1990) 507
Gorecki, J. and J. Gryko, Molecular dynamics simulation of a chemical reaction 54 (1989) 245
Gorishny, S.G., S.A. Larin, L.R. Surguladze and F.V. Tkachov, MINCER: program for multiloop calculations in quantum field theory for the SCHOONSCHIP system 55 (1989) 381
Goto, H., see Y. Karita 57 (1989) 455
Govorun, V.N., see V.P. Voevodin 57 (1989) 532
Grant, I.P., see K.G. Dyall 58 (1990) 345
Grant, I.P., see K.G. Dyall 55 (1989) 425
Grappin, R., see M. Velli 59 (1990) 153
Graudenz, D., see N.K. Falck 56 (1989) 181
Green, M.G., see J.M. Carter 57 (1989) 495
Greenbaum, A., C. Li and H.Z. Chao, Parallelizing preconditioned conjugate gradient algorithms 53 (1989) 295
Greiman, W.H., see D.E. Hall 57 (1989) 211
Greiman, W.H., see D.E. Hall 57 (1989) 499
Grest, G.S., B. Dünweg and K. Kremer, Vectorized link cell FORTRAN code for molecular dynamics simulaton for a large number of particles 55 (1989) 269
Grosdidier, G., Use of an IBM-FPS loosely coupled array of processors for high energy physics programs 52 (1989) 207
Grosse-Wiesmann, P., see D. Briggs 57 (1989) 273
Grotendorst, J., Approximating functions by means of symbolic computation and a general extrapolation method 59 (1990) 289
Grotendorst, J., MAPLE programs for converting series expansions to rational functions using the Levin transformation. Automatic generation of FORTRAN functions for numerical applications 55 (1989) 325
Gryko, J., see J. Gorecki 54 (1989) 245
Gündüç, Y., see C. Topaçli 52 (1988) 65
Gustafsson, L., see A.W. Booth 57 (1989) 332
Guthöhrlein, G.H., see M. Damarowsky 52 (1989) 187

Hackel, S., see E. Ganssauge 55 (1989) 233
Hackenburg, R.W., see A.C. Saulys 57 (1989) 353
Hall, D.E., W.H. Greiman, W.F. Johnston, A.X. Merola, S.C. Loken and D.W. Robertson, The software bus: a vision for scientific software development 57 (1989) 211
Hall, D.E., A. Agogino, W.H. Greiman, W.F. Johnston, D. Olson, R. Paasch, A. Padgaonkar and D.W. Robertson, A fault location system for a time of flight detector array 57 (1989) 499
Hallam-Baker, P.M. and I.C. McArthur, Use of Occam in ZEUS 57 (1989) 520
Halonen, L. and M.S. Child, Local mode vibrations in tetrahedral molecules 51 (1988) 173
Handy, N.C., see S. Carter 51 (1988) 49
Handy, N.C., see S. Carter 55 (1989) 71
Handy, N.C., see P.J. Knowles 54 (1989) 75
Hannedouche, F., see U. Chandra 57 (1989) 263

Hansen, J.P., General subroutines for the calculation of atomic and molecular two-centre integrals 58 (1990) 217
Hansen, J.P. and K. Taulbjerg, A preorthonormalization procedure for coupled channel problems 51 (1988) 317
Haraguchi, M., see A. Nakamura 51 (1988) 301
Harding, L.B., see W.C. Ermler 51 (1988) 257
Harper, D., Vector 33: a REDUCE program for vector algebra and calculus in orthogonal curvilinear coordinates 54 (1989) 295
Harris, F., see T. Adye 57 (1989) 466
Hartmann, U. and E.D. Davis, *epic*GRASS – symbolic calculations with anticommuting variables 54 (1989) 353
Hartung, G., see D. Würtz 56 (1989) 155
Hase, W.L., see S.R. vande Linde 51 (1988) 17
Hassanzadeh, S., see S. Foresti 53 (1989) 349
Haug, K., see C. Duneczky 53 (1989) 357
Haydock, R., Recursive tridiagonalization of infinite dimensional Hamiltonians 55 (1989) 1
Haydock, R., Accuracy of the recursion method and basis nonorthogonality 53 (1989) 133
Haynes, W., see S. Cittolin 57 (1989) 370
Heath, G., see ZEUS CDAQ Collaboration 57 (1989) 313
Heck, D., see H.J. Gils 56 (1989) 105
Heck, L., D.R. Flower and G. Pineau des Forêts, A computer program for calculating the structure of magnetohydrodynamical shocks in interstellar clouds 58 (1990) 169
Heck, L., see R.J. Allan 59 (1990) 325
Heermann, D.W., see A. N. Burkitt 54 (1989) 201
Heermann, D.W., P. Nielaba and M. Rovere, Hybrid molecular dynamics 60 (1990) 311
Heermann, D.W., see B.M. Forrest 59 (1990) 455
Hege, H.C., see A. Nakamura 51 (1988) 301
Heinrich, J., see H. Perlt 56 (1990) 385
Heller, E.J., see J.H. Frederick 51 (1988) 83
Henriet, C., see M.-M. Rohmer 60 (1990) 127
Hermans, D., W. Kerner and M. Goossens, Linearly overstable magnetic convection in 1D compressible and non-uniform plasmas 59 (1990) 127
Hertzberger, L.O., Does HEP still hold challenges for computer science? 57 (1989) 15
Heuer, H.-O., A fast vectorized Fortran 77 program for the Monte Carlo simulation of the three-dimensional Ising system 59 (1990) 387
Hey, A.J.G., The role of MIMD arrays of transputers in computational physics 56 (1989) 1
Hibbert, A., C. Froese Fischer and M.R. Godefroid, Non-orthogonal orbitals in MCHF or configuration interaction wave functions 51 (1988) 285
Hinde, P., see R. Barlow 56 (1990) 325
Hirose, H., see Y. Karita 57 (1989) 455
Hnatowicz, V., V. Ilyushchenko and P. Kozma, GSAP: Fortran code for gamma-spectrum analysis 60 (1990) 111
Ho, N., see A.W. Booth 57 (1989) 332
Hoare, C.A.R., Formal methods in computer system design 57 (1989) 206
Hoek, J., Use of attached transputer hardware to VAX's for offline analysis 57 (1989) 503
Hoftun, J.S., see D. Cutts 57 (1989) 339
Hoftun, J.S., see D. Cutts 57 (1989) 478

Hogeweij, G.M.D., G. Hordósy and N.J. Lopes Cardozo, Heat transport analysis with error calculation 59 (1990) 245
Holmgren, S., see D. Briggs 57 (1989) 273
Hood, A.W., see P. de Bruyne 59 (1990) 55
Horáček, J. and J. Bok, K-matrix calcuation for general nonlocal potentials 59 (1990) 319
Hordósy, G., see G.M.D. Hogeweij 59 (1990) 245
Hsiao, M.-Y., K.A. Werley and K.M. Ling, CRFX, a one-and-a-quarter-dimensional transport code for field-reversed configuration studies 54 (1989) 329
Hsieh, H.C., see W.C. Ermler 51 (1988) 257
Hubeny, I., A computer program for calculating non-LTE model stellar atmospheres 52 (1988) 103
Huberman, B.A., Parallel computation 56 (1989) 25
Humpert, B., A comparitive study of neural network architectures 58 (1990) 223
Humpert, B., On the use of neural networks in high energy physics experiments 56 (1990) 299
Hunt, L., see A.M. Rushton 57 (1989) 427
Hurlburt, N.E., see J. Toomre 59 (1990) 105
Hurst, G.J.B., see M. Dupuis 52 (1989) 415
Hutchinson, J.S., see P.R. Fleming 51 (1988) 59
Hutton, J., Future scientific networking 57 (1989) 188

Iacovacci, M., see ZEUS CDAQ Collaboration 57 (1989) 313
Ilyin, V.A., A.P. Kryukov, A.Ya. Rodioniov and A.Yu. Taranov, High speed Dirac algebra calculations in a space of arbitrary dimension by means of a computer algebra system 57 (1989) 505
Ilyushchenko, V., see V. Hnatowicz 60 (1990) 111
Indrea, E., see N. Aldea 60 (1990) 145
Indrea, E., see N. Aldea 60 (1990) 155
Indrea, E., see N. Aldea 51 (1988) 451
Irving, A.C., see A.N. Burkitt 59 (1990) 447
Ito, T., J. Makino, T. Ebisuzaki and D. Sugimoto, A special-purpose N-body machine GRAPE-1 60 (1990) 187
Ivanova, N.S., see V.P. Voevodin 57 (1989) 532
Izrar, B., A. Ghizzo, P. Bertrand, E. Fijalkow and M.R. Feix, Integration of Vlasov equation by a fast Fourier Eulerian code 52 (1989) 375

Jacobs, P.W.M., see M. Mościński 54 (1989) 47
Jacobs, P.W.M., see Z.A. Rycerz 60 (1990) 53
Jadach, S. and B.F.L. Ward, YFS2 – The second-order Monte Carlo program for fermion pair production at LEP/SLC, with the initial state radiation of two hard and multiple soft photons 56 (1990) 351
James, F., A review of pseudorandom number generators 60 (1990) 329
Jamieson, M.J., see R.S. Friedman 58 (1990) 17
Jamieson, M.J., see R.S. Friedman 55 (1989) 137
Jamitzky, F., see M. Scholer 59 (1990) 175
Janevski, Z.D., see D.V. Pantelic 55 (1989) 5
Janicki, C., A computer program for the free–free and bound–free Gaunt factors of Rydberg systems 60 (1990) 281
Janse Van Rensburg, D.J. and D.A. McNamara, An interactive computer-graphics-based processor for boundary element modelling of electromagnetic scattering by thin conducting wires 55 (1989) 457

Jaquet, R., Application of the finite element method to eigenvalue problems. I. One dimensional calcualtions using optimized elements 58 (1990) 257
Jeffery, D.R.N., see C. Bizeau 57 (1989) 301
Jeffery, D.R.N., see S.P. Booth 57 (1989) 486
Jejcic, A., J. Maillard, J. Silva, M. Auguin and F. Boeri, Could running experience on SPMD computers contribute to the architectural choices for future dedicated computers for high energy physics simulation? 57 (1989) 507
Jenkins, D.A., see A. Minter 59 (1990) 499
Johnson, B.R., Semiclassical vibrational eigenvalues of H_2O and SO_2 by the adiabatic switching method 51 (1988) 1
Johnson, C.R., see D. Cutts 57 (1989) 339
Johnson, C.R., see D. Cutts 57 (1989) 478
Johnson, C.T., see K.G. Dyall 58 (1990) 345
Johnson, C.T., see K.G. Dyall 55 (1989) 425
Johnstad, H., PAW at Fermilab 57 (1989) 438
Johnston, D.A., see C.F. Baillie 58 (1990) 105
Johnston, W.F., see D.E. Hall 57 (1989) 211
Johnston, W.F., see D.E. Hall 57 (1989) 499
Jones, R., see D.M. Sendall 57 (1989) 343
Jones, R., see C. Boissat 57 (1989) 512
Joubert, W.D., see T.C. Oppe 53 (1989) 283
Justice, B.D., see S.E. Sobottka 51 (1988) 295

Kallies, H., see E. Ganssauge 55 (1989) 233
Kamgnia, E. and A. Sameh, A fast elliptic solver for simply connected domains 55 (1989) 43
Kaneko, T. and S. Kawabata, A preprocessor for FORTRAN source code produced by REDUCE 55 (1989) 141
Karita, Y., F. Abe, H. Hirose, H. Goto, R. Ogasawara, F. Yuasa, Y. Banno and Y. Yasu, Networking for high energy physics in Japan 57 (1989) 455
Kawabata, S., see T. Kaneko 55 (1989) 141
Kehres, J., see ZEUS CDAQ Collaboration 57 (1989) 313
Kelkar, K. M. and S.V. Patankar, Development of generalized block correction procedures for the solution of descretized Navier–Stokes equations 53 (1989) 329
Kennedy, A.D., Status of lattice gauge theory calculations 57 (1989) 57
Kenway, R.D., see S.P. Booth 57 (1989) 101
Kermode, J.P. and D. Weaire, 2D-FROTH: a program for the investigation of 2-dimensional froths 60 (1990) 75
Kermode, M.W., see M.M. Mustafa 55 (1989) 109
Kerner, W., see J. Cullum 53 (1989) 19
Kerner, W., see R.A.M. van der Linden 59 (1990) 61
Kerner, W., see S. Poedts 59 (1990) 75
Kerner, W., see S. Poedts 59 (1990) 95
Kerner, W., see D. Hermans 59 (1990) 127
Keyes, D.E., Domain decomposition methods for the parallel computation of reacting flows 53 (1989) 181
Killeen, J., see A.A. Mirin 51 (1988) 373
Kim, J., see D. Boley 53 (1989) 61
Kincaid, D.R., see T.C. Oppe 53 (1989) 283

Kirkby, D., see ZEUS CDAQ Collaboration 57 (1989) 321
Kitowski, J., see M. Mościński 54 (1989) 47
Klobukowski, M., see S. Fraga 52 (1989) 445
Kniehl, B.A., QCD corrections to vector boson self-energies in the standard model 58 (1990) 293
Knowles, I.G., A linear algorithm for calculating spin correlations in hadronic collisions 58 (1990) 271
Knowles, P.J. and N.C. Handy, A determinant based full configuration interaction program 54 (1989) 75
Knudson, S.K., see D.W. Noid 51 (1988) 11
Koberle, R., Neural networks as content addressable memories and learining machines 56 (1989) 43
Koch, E., see E. Ganssauge 55 (1989) 233
Köhler, S., see H.A. Yousif 59 (1990) 371
Koniges, A.E., see Y.-M. Chen 55 (1989) 359
Koniges, A.E., see D.V. Anderson 51 (1988) 391
Koniges, A.E., see D.V. Anderson 51 (1988) 405
Kouri, D.J., see C. Duneczky 53 (1989) 357
Kovaltsov, V.I., see V.P. Voevodin 57 (1989) 532
Kowalski, H., T. Poser, L. Stanco and E. Tscheslog, Investigation of ADAMO performance in the ZEUS calorimeter reconstruction program 57 (1989) 222
Kozma, P., see V. Hnatowicz 60 (1990) 111
Kozyaev, Yu.M., see V.P. Voevodin 57 (1989) 532
Kramer, G., see N.K. Falck 56 (1989) 181
Kramer, M.A., see A.C. Saulys 57 (1989) 353
Krauss-Varban, D., Some aspects of finite element calculations applied to ULF magnetospheric cavity waves 59 (1990) 85
Kremer, K., see G.S. Grest 55 (1989) 269
Kress, J.D., G.A. Parker, R. T Pack, B.J. Archer and W.A. Cook, Comparison of Lanczos and subspace iterations for hyperspherical reaction path calculations 53 (1989) 91
Kress, J.D., S.B. Woodruff, G.A. Parker and R. T Pack, Some strategies for enhancing the performance of the block Lanczos method 53 (1989) 109
Kreuzberger, T., W. Kummer and M. Schweda, SUSYCAL – symbolic computations in supersymmetric theories 58 (1990) 89
Kreymer, A., see P. Lebrun 57 (1989) 231
Krischer, W., Commercial highly parallel signal processors on-line? 57 (1989) 121
Kronfeld, A.S., K.J.M. Moriarty and G. Schierholz, An efficient method for the computation of glueball masses using the inverse of the covariant Dirac operator as correlator 52 (1988) 1
Kronfeld, A.S., M.L. Laursen, G. Schierholz, C. Schleiermacher and U.-J. Wiese, A vectorized code for the computation of the topological charge in SU(2) lattice gauge theory 54 (1989) 109
Kryukov, A.P., see V.A. Ilyin 57 (1989) 505
Küblbeck, J., M. Böhm and A. Denner, Feyn Arts – Computer-algebraic generation of Feynman graphs and amplitudes 60 (1990) 165
Kummer, W., see T. Kreuzberger 58 (1990) 89
Kunz, P.F., Software management issues 57 (1989) 191
Kuo, C-C.J., see T.F. Chan 53 (1989) 237
Kupfer, K., see M. Shoucri 55 (1989) 253

Lagaris, I.E., see C.S. Chassapis 52 (1989) 223
Lagaris, I.E., see D.G. Papageorgiou 52 (1989) 241
Lagaris, I.E., see D.G. Papageorgiou 58 (1990) 119

Lai, A., see N. Avico 57 (1989) 285
Lamarche, F. and C. Leroy, Evaluation of the volume of intersection of a sphere with a cylinder by elliptic integrals 59 (1990) 359
Lambin, Ph., J.-P. Vigneron and A.A. Lucas, Computation of the surface electron-energy-loss spectrum in specular geometry for an arbitrary plane-stratified medium 60 (1990) 351
Lan, V.K., M. Le Dourneuf, N.F. Allard, H.E. Saraph and W. Eissner, On the comparisons of close-coupling calculatons using the UCL and opacity codes 55 (1989) 303
Landau, R.H., see M.J. Páez 52 (1988) 141
Landowne, S., see J. Fernández-Niello 54 (1989) 409
Langhoff, P.W., see T.J. Gil 53 (1989) 123
Larin, S.A., see S.G. Gorishny 55 (1989) 381
Lauderdale, J.G., see S.C. Tucker 51 (1988) 233
Laugier, J.Ph., see F. Barao 57 (1989) 358
Laursen, M.L., see A.S. Kronfeld 54 (1989) 109
Le Dourneuf, M., see V.K. Lan 55 (1989) 303
Le Roy, R.J., Bound→continuum intensities – a computer program for calculating absorption coefficients, emission intensities or (golden rule) predissociation rates 52 (1989) 383
Lebrun, P. and A. Kreymer, High level language memory management on parallel architectures 57 (1989) 231
Lee, D.K., Application of theta functions for numerical evaluation of complete elliptic integrals of the fist and second kinds 60 (1990) 319
Lee, J.S., see B.H. Chang 51 (1988) 195
Lee, L.C., Time-dependent magnetic reconnection: two- and three-dimensional MHD simulations 59 (1990) 163
Lee, M.H., Frequency moment sum rules, recurrence relations and continued fractions in nonequilibrium statistical mechanics 53 (1989) 147
Leitner, D.M., G.A. Natanson, R.S. Berry, P. Villarreal and G. Delgado-Barrio, Particles-on-a-sphere method for computing the rotational–vibrational spectrum of H_2O 51 (1988) 207
Leroy, C., see F. Lamarche 59 (1990) 359
Leschber, Y., see O. Castaños 52 (1988) 71
Leschber, Y., see J.P. Draayer 56 (1989) 279
Lessner, E.S., Weighted fit of parametric functions to distributions. The new interface of HBOOK with MINUIT 57 (1989) 385
Levine, M.J.S., A LaTeX graphics routine for drawing Feynman diagrams 58 (1990) 181
Levine, R.H., You want me to predict the future? 57 (1989) 118
Levron, D., see Z. Burshtein 51 (1988) 349
Lewis, J.G. and D.J. Pierce, Recent research in iterative methods at Boeing 53 (1989) 213
Li, C., see A. Greenbaum 53 (1989) 295
Li, C.H., see E. Dean 53 (1989) 401
Li, S.P., see S.C. Wang 60 (1990) 181
Light, J.C., see Z. Bačić 51 (1988) 35
Lin, S.-Y., see R. Cohen 53 (1989) 455
Lin, Y., Numerical calculation of force-free magnetic field for solar active regions and its application to prediction of solar flares 59 (1990) 139
Lindenbaum, S.J., see A.C. Saulys 57 (1989) 353
Ling, K.M., see M.-Y. Hsiao 54 (1989) 329
Linke, V., see A. Nakamura 51 (1988) 301
Linn, S.L., see B. Denby 56 (1990) 293

Linn, S.L., see B. Denby 57 (1989) 297
Liou, J., see T.E. Tezduyar 53 (1989) 441
Llobet, X., K. Appert, A. Bondeson and J. Vaclavik, On spectral pollution 59 (1990) 199
Loken, S.C., see D.E. Hall 57 (1989) 211
Lombardo, M.P., see N. Avico 57 (1989) 285
Longacre, R.S., see A.C. Saulys 57 (1989) 353
Lopes Cardozo, N.J., see G.M.D. Hogeweij 59 (1990) 245
Lopez, R., see J.P. Draayer 56 (1989) 279
López, R., see J.R. Álvarez Collado 52 (1989) 323
Lorenz, P., see T. Adye 57 (1989) 466
Love, W.A., see A.C. Saulys 57 (1989) 353
Loveless, R., see ZEUS CDAQ Collaboration 57 (1989) 313
Lu, D.R. and K. Park, A three-dimensional protein graphic program 60 (1990) 257
Lu, W., see C. Bizeau 57 (1989) 301
Lu, W., see S.P. Booth 57 (1989) 486
Lucas, A.A., see Ph. Lambin 60 (1990) 351
Luckhardt, S., see M. Shoucri 55 (1989) 253
Lukyantsev, A.F., see V.P. Voevodin 57 (1989) 532
Luskin, M., see R. Cohen 53 (1989) 455

Máca, F. and M. Scheffler, Surface Green's function for a rumpled crystal surface 51 (1988) 381
Macfarlane, J.J., IONMIX – a code for computing the equation of state and radiative properties of LTE and non-LTE plasmas 56 (1989) 259
Mackenzie, P.B., Machines for lattice gauge theory 57 (1989) 37
MacLaren, J.M., S. Crampin, D.D. Vvedensky, R.C. Albers and J.B. Pendry, Layer Korringa–Kohn–Rostoker electronic structure code for bulk and interface geometries 60 (1990) 365
Maier, R., see D. Boley 53 (1989) 61
Maillard, J., see A. Jejcic 57 (1989) 507
Maino, G., see V. Rosato 54 (1989) 251
Makino, J., see T. Ito 60 (1990) 187
Malegat, L., DCS – a program for calculating differential cross sections for the electronic excitation of diatomic molecules at fixed nuclei 60 (1990) 391
Mangeney, A., see M. Velli 59 (1990) 153
Männer, R., A programmable systolic array correlator as a trigger processor for electron pairs in RICH (ring image Cherenkov) counters 57 (1989) 516
Maquet, A., see A. Dubois 60 (1990) 271
Marinari, E., see N. Avico 57 (1989) 285
Marsaglia, G., B. Narasimhan and A. Zaman, A random number generator for PC's 60 (1990) 345
Marshall, G., Monte Carlo methods for the solution of nonlinear partial differential equations 56 (1989) 51
Martin, B., see F. Barao 57 (1989) 358
Martin, B., see S. Cittolin 57 (1989) 370
Martin, D.R., see A.A. Mirin 54 (1989) 183
Martin, W., see S. Youssef 57 (1989) 251
Martin, W.R., Successful vectorization – reactor physics Monte Carlo code 57 (1989) 68
Martinec, Z., Program to calculate the spectral harmonic expansion coeffecients of the two scalar fields product 54 (1989) 177

Martini, A., see P. Bacilieri 57 (1989) 459
Martorana, V., see F. Reale 60 (1990) 201
Marzano, F., see N. Avico 57 (1989) 285
Matheys, J-P., see D.M. Sendall 57 (1989) 343
Matveev, M.Yu., see V.P. Voevodin 57 (1989) 532
Mauser, N., see A. Arnold 59 (1990) 267
May, E.N., Portable parallel programming in a Fortran environment 57 (1989) 278
Mazza, C., Software project management 57 (1989) 23
McArthur, I.C., see P.M. Hallam-Baker 57 (1989) 520
McColl, W.F., Parallel algorithms and architectures 57 (1989) 84
McCoy, M.G., see A.A. Mirin 51 (1988) 369
McCoy, M.G., see A.A. Mirin 51 (1988) 373
McGlynn, T., see A.M. Rushton 57 (1989) 427
McGrath, R.L., A. Elmaani, J.M. Alexander, P.A. DeYoung, T. Ethvignot, M.S. Gordon and E. Renshaw, A Monte Carlo reaction simulation for small-angle correlations between light charged particles 59 (1990) 507
McMullin, J.N., see K.H. Teo 59 (1990) 277
McNamara, D.A., see D.B. Davidson 56 (1989) 249
McNamara, D.A., see D.J. Janse Van Rensburg 55 (1989) 457
Medcalf, T., see J.M. Carter 57 (1989) 495
Medici, G., see P. Bacilieri 57 (1989) 459
Mehta, M.A. and N. De Leon, LUCY: a FORTRAN implementation of semiclassical spectral quantization 51 (1988) 115
Merkel, A., see H.J. Gils 56 (1989) 105
Mermikides, M.E., see C.H. Georiopoulos 57 (1989) 255
Mermikides, M.E., see M.J. Corden 57 (1989) 260
Merola, A.X., see D.E. Hall 57 (1989) 211
Mestel, B.D., see Q. Chen 51 (1988) 463
Metcalf, M., Recent progress in Fortran standardization 57 (1989) 78
Meurant, G., Practical use of the conjugate gradient method on parallel supercomputers 53 (1989) 467
Meyer, J., W.-D. Sepp, B. Fricke and A. Rosén, Computation of relativistic symmetry orbitals for finite double point groups 54 (1989) 55
Meyer, J., W.-D. Sepp, B. Fricke and A. Rosén, Erratum notice. Computation of relativistic symmetry orbitals for finite double point groups (ABHW – CPC 54(1989)55) 55 (1989) 469
Migneron, R., K.S.S. Narayanan and H. Rasmussen, Numerical inversion of moments 54 (1989) 239
Mikić, Z., see D.D. Schnack 59 (1990) 21
Miller, S., see S. Carter 55 (1989) 71
Miller, S., see B.T. Sutcliffe 51 (1988) 73
Miller, S., see J. Tennyson 55 (1989) 149
Milne, G.J., see J.S. Reid 55 (1989) 91
Milotti, E., see G.R. Aiello 56 (1989) 135
Milotti, E., see G.R. Aiello 56 (1989) 141
Minter, A. and D.A. Jenkins, Bremsstrahlung cross section for a point, spinless target 59 (1990) 499
Mirabelli, G., see P. Bacilieri 57 (1989) 459
Mirin, A.A., D.R. Martin and N.J. O'Neill, TUBE88 – a code which computes magnetic field lines 54 (1989) 183
Mirin, A.A. and M.G. McCoy, SIGV5D: a routine to compute the reaction rates of interacting distribution functions 51 (1988) 369

Mirin, A.A., M.G. McCoy, G.P. Tomaschke and J. Killeen, FPPAC88: a two-dimensional multispecies nonlinear Fokker–Planck package 51 (1988) 373
Mitra, P., see M. Creutz 55 (1989) 251
Mobayyen, M., see ZEUS CDAQ Collaboration 57 (1989) 313
Mohamed, A.R. and M.A. El Sharkawy, 16-bit microprocessor in second-order state-space digital filter design and implementation 59 (1990) 283
Mohanakrishnan, P., Use of albedo for neutron reflector regions in reactor core 3D simulations 55 (1989) 311
Möller, W., W. Eckstein and J.P. Biersack, TRIDYN – binary collision simulation of atomic collisions and dynamic composition changes in solids 51 (1988) 355
Monagan, M.B., see T.C. Scott 52 (1989) 261
Moncrieff, D., D.J. Baker and S. Wilson, Diagrammatic many-body perturbation expansion for atoms and molecules. VI 55 (1989) 31
Moon, W.M., see M.H. Serzu 52 (1989) 333
Moon, W.M., see M.H. Serzu 52 (1989) 337
Moore, R.A., see T.C. Scott 52 (1989) 261
Morales, J.J., L.F. Rull and S. Toxvaerd, Efficiency test of the traditional MD and the link-cell methods 56 (1989) 129
Morales, J.J. and M.J. Nuevo, A technique for improving the link-cell method 60 (1990) 195
Moreau, P., see F. Barao 57 (1989) 358
Morgan, W.L. and B.M. Penetrante, ELENDIF: a time-dependent Boltzmann solver for partially ionized plasmas 58 (1990) 127
Moriarty, K.J.M., see A.S. Kronfeld 52 (1988) 1
Moriarty, K.J.M., see J.-M. Drouffe 52 (1989) 249
Moriarty, K.J.M., E. Myers and C. Rebbi, A vector code for the numerical simulation of cosmic strings and flux vortices in superconductors on the ETA-10 54 (1989) 273
Moriarty, K.J.M., see M. Creutz 55 (1989) 251
Mornacchi, G., see D.M. Sendall 57 (1989) 343
Mornacchi, G., see C. Boissat 57 (1989) 512
Morris, T.W., see A.C. Saulys 57 (1989) 353
Mościński, M., J. Kitowski, Z.A. Rycerz and P.W.M. Jacobs, A vectorized algorithm on the ETA 10-P for molecular dynamics simulation of large number of particles confined in a long cylinder 54 (1989) 47
Mount, R.P., Overview of the essential tools 57 (1989) 140
Mueller, K. and P. Pfeifer, CODEBASE: a commercially developed code management system and code transfer facility 57 (1989) 239
Müller, B., see H.E. Rafelski 59 (1990) 521
Müller, Ch., see E. Ganssauge 55 (1989) 233
Murtagh, F.D., Hierarchical trees in N-body simulations: relations with cluster analysis methods 52 (1988) 15
Mustafa, M.M., M.W. Kermode and E.S. Zahran, Solution of the two-nucleons Schrödinger equation with nonlocal tensor potential in the $^3S_1$–$^3D_1$ state 55 (1989) 109
Muszynska, J., see S. Fraga 52 (1989) 445
Myers, D.R., HEP graphics: standard and portability versus performance and cost 57 (1989) 176
Myers, E., see K.J.M. Moriarty 54 (1989) 273
Myers, N.C., see U. Schmid 58 (1990) 329

NA-35 Collaboration, G. Vesztergombi, "Iconic" tracking algorithms for high energy physics using the TRAX-I massively parallel processor 57 (1989) 290
Nakamura, A., G. Feuer, H.C. Hege, V. Linke and M. Haraguchi, Fast algorithm for an exact treatment of lattice quantum chromodynamics by Monte Carlo simulation on vector processors 51 (1988) 301
Nakamura, H., see A. Ohsaki 52 (1989) 291
Nappi, E., see M. Castellano 51 (1988) 431
Narasimhan, B., see G. Marsaglia 60 (1990) 345
Narayanan, K.S.S., see R. Migneron 54 (1989) 239
Nash, T., Event parallelism: distributed memory parallel computing for high energy physics experiments 57 (1989) 47
Natanson, G.A., see D.M. Leitner 51 (1988) 207
Navarra, A., An application of GMRES to indefinite linear problems in meteorology 53 (1989) 321
Nesbet, R.K., Analytical evaluation of integrals over Coulomb wave functions 52 (1988) 29
Nex, C.M.M., The block Lanczos algorithm and the calculation of matrix resolvents 53 (1989) 141
Nguyen, T., see D.M. Sendall 57 (1989) 343
Nichols, J., The Fermilab central computing facility architectural model 57 (1989) 417
Nielaba, P., see D.W. Heermann 60 (1990) 311
Noid, D.W., S.K. Knudson and B.G. Sumpter, Exact semiclassical calculation of eigenvalues for multidimensional systems using SOS 51 (1988) 11
Nordlund, Å. and R.F. Stein, 3-D simulations of solar and stellar convection and magnetoconvection 59 (1990) 119
Norman, M.R., see B.A. Shadwick 54 (1989) 95
Notz, D., see ZEUS CDAQ Collaboration 57 (1989) 313
Nour-Omid, B., Applications of the Lanczos method 53 (1989) 157
Nour-Omid, B., see B.N. Parlett 53 (1989) 169
Nuevo, M.J., see J.J. Morales 60 (1990) 195
Nunn, D., The numerical simulation of VLF nonlinear wave–particle interactions in collision-free plasmas using the Vlasov hybrid simulation technique 60 (1990) 1

Ochsenbein, F., see A.M. Rushton 57 (1989) 427
Odorico, R., see L. Alvisi 51 (1988) 443
Odorico, R., COJETS 5.12: a Monte Carlo simulation program for $\bar{p}$–p and p–p collisions 59 (1990) 527
Oehlschläger, J., see H.J. Gils 56 (1989) 105
Ogasawara, R., see Y. Karita 57 (1989) 455
Ohsaki, A., H. Nakamura and S.C. Park, On the evaluation of cross section and rate constant of atom–diatom reactions in the sudden and adiabatic approximations 52 (1989) 291
Olson, D., see D.E. Hall 57 (1989) 499
O'Neale, S.W., The OPAL event server 57 (1989) 413
O'Neill, N.J., see A.A. Mirin 54 (1989) 183
Oppe, T.C., W.D. Joubert and D.R. Kincaid, An overview of NSPCG: a nonsymmetric preconditioned conjugate gradient package 53 (1989) 283
Orr, R.S., see ZEUS CDAQ Collaboration 57 (1989) 313
Orr, R.S., see ZEUS CDAQ Collaboration 57 (1989) 321
Orteu, S., see M. Delfino 57 (1989) 401
Otto, A., 3D resistive MHD computations of magnetospheric physics 59 (1990) 185
Otto, S.W., Shared-memory versus distributed-memory: halftime score 57 (1989) 95

Paasch, R., see D.E. Hall 57 (1989) 499
Paatero, P., see L. Unonius 59 (1990) 225
Pace, E., see P. Bacilieri 57 (1989) 459
Pacheco, A., see M. Delfino 57 (1989) 401
Pacheco, A.J., D.E. Di Gregorio, J.O. Fernández Niello and M. Elgue, Fusion cross sections from measurements of delayed X-rays 52 (1988) 93
Pacheco, J.M., see C. Yannouleas 52 (1988) 85
Pacheco, J.M., see C. Yannouleas 54 (1989) 315
Padgaonkar, A., see D.E. Hall 57 (1989) 499
Páez, M.J., M.E. Sagen and R.H. Landau, LPOTp: nucleon elastic-scattering from spin 0 and 1/2 nuclei in momentum space 52 (1988) 141
Pais, V.A. and A. Caruso, A collisional method to correct the mesh distortion in two-dimensional Langrangian hydrocodes 58 (1990) 55
Palazzi, P., see S.M. Fisher 57 (1989) 169
Palermo, S., see A.R.C. da Rocha 57 (1989) 524
Paniagua, M., see J.R. Álvarez Collado 52 (1989) 323
Pantelic, D.V. and Z.D. Janevski, A new kind of splines and their use for fast ray-tracing in reflective cavities 55 (1989) 5
Paolucci, P., see N. Avico 57 (1989) 285
Papageorgiou, D.G. and I.E. Lagaris, MERLIN-2.1 DOUBLE PRECISION 58 (1990) 119
Papageorgiou, D.G., see C.S. Chassapis 52 (1989) 223
Papageorgiou, D.G., C.S. Chassapis and I.E. Lagaris, MERLIN-2.0 – enhanced and programmable version 52 (1989) 241
Parga, N., Neural networks as models of associative memories 55 (1989) 77
Parisi, G., see N. Avico 57 (1989) 285
Park, K., see D.R. Lu 60 (1990) 257
Park, S.C. and J.P. Draayer, Balanced binary tree code for scientific applications 55 (1989) 189
Park, S.C., see J.P. Draayer 56 (1989) 279
Park, S.C., see A. Ohsaki 52 (1989) 291
Parker, G.A., see J.D. Kress 53 (1989) 91
Parker, G.A., see J.D. Kress 53 (1989) 109
Parker, R.D. and R.L. Dewar, 2-D, nonlinear spectral simulation of reconnective transitions on a periodic, planar current sheet with (1) smooth and (2) corrugated conducting wall boundary conditions with flow 59 (1990) 1
Parkman, C., see C. Bizeau 57 (1989) 301
Parlett, B.N. and B. Nour-Omid, Towards a black box Lanczos program 53 (1989) 169
Parpia, F.A., see K.G. Dyall 55 (1989) 425
Parpia, F.A., see K.G. Dyall 58 (1990) 345
Parsons, I.D., The implementations of an element level multigrid algorithm on the Alliant FX/8 53 (1989) 337
Patankar, S.V., see K. M. Kelkar 53 (1989) 329
Patrick, J., see D.R. Quarrie 57 (1989) 325
Pech, J., see N. Avico 57 (1989) 285
Pendleton, B.J., see S.P. Booth 57 (1989) 101
Pendry, J.B., see P.J. Rous 54 (1989) 137
Pendry, J.B., see P.J. Rous 54 (1989) 157
Pendry, J.B., see J.M. MacLaren 60 (1990) 365

Penetrante, B.M., see W.L. Morgan 58 (1990) 127
Peres, G., see F. Reale 60 (1990) 201
Perlt, H., J. Ranft and J. Heinrich, Calculation of QED graphs with the spinor technique 56 (1990) 385
Perrin, Y., see C. Bizeau 57 (1989) 301
Perrine, B., see A.M. Rushton 57 (1989) 427
Persson, S., Measurement and three dimensional reconstruction of particle tracks in emulsion chambers 55 (1989) 103
Peshev, O., see F. Babalievski 60 (1990) 27
Pfeifer, P., see K. Mueller 57 (1989) 239
Pichon, B., Numerical calculation of the generalized Fermi–Dirac integrals 55 (1989) 127
Pierce, D.J., see J.G. Lewis 53 (1989) 213
Pimenta, M., see F. Barao 57 (1989) 358
Pimenta, M., see C.M.L. Werner 57 (1989) 364
Pineau des Forêts, G., see L. Heck 58 (1990) 169
Ping, J.-L., Q.-R. Zheng, B.-Q. Chen and J.-Q. Chen, Computer generated subgroup-symmetry adapted irreducible representations and CG coefficients of space groups by the eigenfunction method 52 (1989) 355
Platner, E.D., see A.C. Saulys 57 (1989) 353
Plummer, E.P., see K.G. Dyall 55 (1989) 425
Plummer, E.P., see K.G. Dyall 58 (1990) 345
Poedts, S., M. Goossens and W. Kerner, Numerical simulation of the stationary state of periodically driven coronal loops 59 (1990) 75
Poedts, S., M. Goossens and W. Kerner, Temporal evolution of resonant absorption in solar coronal loops 59 (1990) 95
Pollock, E.L., Properties and computation of the Coulomb pair density matrix 52 (1988) 49
Porte, J.P., see S. Cittolin 57 (1989) 370
Portilho, O., MP – a multiple precision package 59 (1990) 345
Poser, T., see H. Kowalski 57 (1989) 222
Pouzard, G., see A. Allouche 54 (1989) 171
Preston, S.C., see R.S. Friedman 58 (1990) 17
Purrington, R.D., Particle-vibration coupling model for odd-*A* nuclei 58 (1990) 211
Pushkarev, A.N., see A.J. Dyachenko 60 (1990) 239
Putzer, A., Data structures and data-base systems used in high energy physics: modelling and implementation 57 (1989) 156

Quarrie, D.R., M.D. Anderson, C.T. Day, G. Goeransson, J. Patrick, M. Schmitz, E. Sexton and B. Troemel, The CDF online system 57 (1989) 325

Rademakers, A.A., see M. Brun 57 (1989) 235
Rafelski, H.E. and B. Müller, PC-Fortran programs for muon reactivation calculations in muon-catalyzed fusion 59 (1990) 521
Raine, A.R.C., D. Fincham and W. Smith, Systolic loop methods for molecular dynamics simulation using multiple transputers 55 (1989) 13
Rajeswari, V., see K. Srinivasa Rao 56 (1989) 231
Ramírez, G., see J.R. Álvarez Collado 52 (1989) 323
Randrup, J., Microcanonical sampling of momenta in simulations of many-particle systems 59 (1990) 439
Ranft, J., see H. Perlt 56 (1990) 385

Raptis, A.D., see J.R. Cash 56 (1990) 391
Rapuano, F., see N. Avico 57 (1989) 285
Rasmussen, H., see R. Migneron 54 (1989) 239
Ratner, M.A., see H. Romanowski 51 (1988) 161
Read, B.J., Data structures and organisation: special problems in scientific applications 57 (1989) 164
Reale, F., F. Brugè, G. Peres, S.L. Fornili, V. Martorana and S. Serio, One-dimensional hydrodynamic modeling of coronal plasmas on transputer arrays 60 (1990) 201
Rebbi, C., see K.J.M. Moriarty 54 (1989) 273
Reid, J.S. and G.J. Milne, Quasi-elastic X-ray scattering divergence analysis calculation 55 (1989) 91
Reid, J.S., Synchrotron radiation flux at experimental stations 54 (1989) 307
Reis, M., see F. Barao 57 (1989) 358
Remiddi, E., see N. Avico 57 (1989) 285
Renshaw, E., see R.L.McGrath 59 (1990) 507
Rhee, J.T., see E. Ganssauge 55 (1989) 233
Riccardi, G., see U. Chandra 57 (1989) 263
Richmond, A., see A.M. Rushton 57 (1989) 427
Rickard, G.J., see E.M. Epperlein 52 (1988) 7
Riemann, T., see D.Yu. Bardin 59 (1990) 303
Roberts, K.J., see R. Docherty 51 (1988) 423
Robertson, D.W., see D.E. Hall 57 (1989) 211
Robertson, D.W., see D.E. Hall 57 (1989) 499
Robinson, G.W., see S.-B. Zhu 52 (1989) 317
Rodioniov, A.Ya., see V.A. Ilyin 57 (1989) 505
Rohmer, M.-M., J. Demuynck, M. Bénard, R. Wiest, Chr. Bachmann, C. Henriet and R. Ernenwein, A program system for ab initio MO calculations on vector an parallel processing machines. II. SCF closed-shell and open-shell iterations 60 (1990) 127
Rohmer, M.-M., see R. Ernenwein 58 (1990) 305
Romanowski, H., M.A. Ratner and R.B. Gerber, Determination of potential energy surfaces of linear triatomics from vibration–rotation spectra: an inversion method applied to CO_2 51 (1988) 161
Romelfanger, F., see A.M. Rushton 57 (1989) 427
Rosa, R., see A. Desalvo 60 (1990) 305
Rosato, V., G. Maino and A. Ventura, A molecular dynamics model for the study of helium on transition metals 54 (1989) 251
Rosén, A., see J. Meyer 54 (1989) 55
Rosén, A., see J. Meyer 55 (1989) 469
Rosmus, P., see S. Carter 55 (1989) 71
Rossi, P., see T.A. Degrand 60 (1990) 211
Rous, P.J. and J.B. Pendry, Tensor LEED I: a technique for high speed surface structure determination by low energy electron diffraction. TLEED1 54 (1989) 137
Rous, P.J. and J.B. Pendry, Tensor LEED II: a technique for high speed surface structure determination by low energy electron diffraction. TLEED2 54 (1989) 157
Rovere, M., see D.W. Heermann 60 (1990) 311
Roweth, D., see S.P. Booth 57 (1989) 101
Roy, D., see S. Bhowmick 54 (1989) 31
Roy, D., see R. Bhattacharya 55 (1989) 297
Rubenchik, A.M., see A.J. Dyachenko 60 (1990) 239
Ruder, H., see J. Schastok 54 (1989) 167

Rull, L.F., see J.J. Morales 56 (1989) 129
Runge, K., A high speed network for HEP in Germany 57 (1989) 452
Rushton, A.M., L. Hunt, T. McGlynn, F. Ochsenbein, B. Perrine, A. Richmond, F. Romelfanger, G. Russo, P.M.B. Shames, J. Travisano, L. Willard and S. Zeller, Design and implementation of an optical disk-based astronomical data archive 57 (1989) 427
Russo, G., see A.M. Rushton 57 (1989) 427
Rycerz, Z.A., see M. Mościński 54 (1989) 47
Rycerz, Z.A. and P.W.M. Jacobs, Molecular dynamics simulation program of order N for condensed matter. I. MDPYRS1: scalar pyramid, short-range interactions 60 (1990) 53
Rycerz, Z.A., Acceleration of molecular dynamics simulation of order N with neighbour list 60 (1990) 297

Saad, Y., Numerical solution of large nonsymmetric eigenvalue problems 53 (1989) 71
Sachwitz, M., see D.Yu. Bardin 59 (1990) 303
Sagen, M.E., see M.J. Páez 52 (1988) 141
Salina, G., see N. Avico 57 (1989) 285
Salvini, S.A., Erratum notice. A new program to calculate differential and total cross sections for electron–atom or ion scattering using the momentum transfer formalism (AANW – CPC 27 (1982)25) 52 (1988) 165
Sameh, A., see E. Kamgnia 55 (1989) 43
Sanielevici, S., see H. Gausterer 52 (1988) 43
Santonico, R., see P. Bacilieri 57 (1989) 459
Saraph, H.E., see V.K. Lan 55 (1989) 303
Sararu, A. and M. Sararu, Stability of finite linear combinations of vectors under changes of their coefficients. An application to approximation problems 60 (1990) 47
Sararu, M., see A. Sararu 60 (1990) 47
Sarno, R., see N. Avico 57 (1989) 285
Sarrazin, M., see M. Defranceschi 52 (1989) 409
Sasse, A.G.B.M., see H. Wormeester 52 (1988) 19
Saulys, A.C., A. Etkin, K.J. Foley, R.W. Hackenburg, R.S. Longacre, W.A. Love, T.W. Morris, E.D. Platner, S.J. Lindenbaum, C.S. Chan and M.A. Kramer, MPS data-acquisition software system 57 (1989) 353
Sawaryn, A. and W.A. Sokalski, Cumulative atomic multipole moments and point charge models describing molecular charge distribution 52 (1989) 397
Saxena, K.M.S., see S. Fraga 52 (1989) 445
Schaad, M.W., see D. Briggs 57 (1989) 273
Schaile, O., DZDISP: a graphics tool to interact with ZEBRA data structures 57 (1989) 528
Schastok, J., H. Gleixner, M. Soffel, H. Ruder and M. Schneider, The ephemeris program GLE2000 54 (1989) 167
Schatz, G., see H.J. Gils 56 (1989) 105
Schatz, G.C., A program for determining primitive semiclassical eigenvalues for vibrating/rotating nonlinear triatomic molecules 51 (1988) 135
Scheffler, M., see F. Máca 51 (1988) 381
Schierholz, G., see A.S. Kronfeld 52 (1988) 1
Schierholz, G., see A.S. Kronfeld 54 (1989) 109
Schilling, P.K., Graphics at DESY 57 (1989) 443
Schleiermacher, C., see A.S. Kronfeld 54 (1989) 109

Schmid, U., N.C. Myers and J.A. Van Vechten, VIDSIM – a Monte Carlo program for the simulation of atomic diffusion in diamond and zinc-blende structures 58 (1990) 329
Schmidt-Weinmar, H.G., see K.H. Teo 59 (1990) 277
Schmitz, M., see D.R. Quarrie 57 (1989) 325
Schnack, D.D., Z. Mikić, D.C. Barnes and G. van Hoven, Magnetohydrodynamic simulation of coronal magnetic fields 59 (1990) 21
Schneider, B.I. and L.A. Collins, A direct iterative–variational method for solving large sets of linear algebraic equations 53 (1989) 381
Schneider, M., see J. Schastok 54 (1989) 167
Schoen, M., Structure of a simple molecular dynamics FORTRAN program optimized for CRAY vector processing computers 52 (1989) 175
Scholer, M., T. Terasawa and F. Jamitzky, Reconnection and fluctuations in compressible MHD: a comparison of different numerical methods 59 (1990) 175
Schulz, W., see E. Ganssauge 55 (1989) 233
Schumaker, D.E., see D.V. Anderson 51 (1988) 391
Schumaker, D.E., see D.V. Anderson 51 (1988) 405
Schwarz, K., see P. Blaha 59 (1990) 399
Schweda, M., see T. Kreuzberger 58 (1990) 89
Schwenke, D.W., see C. Duneczky 53 (1989) 357
Sciutto, S.J., POLYFIT – a package for polynomial fitting 52 (1989) 427
Scott, D.S., Implementing Lanczos-like algorithms on hypercube architectures 53 (1989) 271
Scott, T.C., R.A. Moore and M.B. Monagan, Resolution of many particle electrodynamics by symbolic manipulation 52 (1989) 261
Scrimieri, E., see P. Colangelo 54 (1989) 235
Secrest, D., see B.H. Chang 51 (1988) 195
Sendall, D.M., C. Boissat, W. Bozzoli, P. Burkimsher, R. Jones, J-P. Matheys, G. Mornacchi, T. Nguyen, P. Vande Vyvre, A. Vascotto and D. Weaver, MODEL: a software suite for data acquisition 57 (1989) 343
Senko, V.A., see V.P. Voevodin 57 (1989) 532
Sephton, A., see ZEUS CDAQ Collaboration 57 (1989) 313
Sepp, W.-D., see J. Meyer 54 (1989) 55
Sepp, W.-D., see J. Meyer 55 (1989) 469
Serio, S., see F. Reale 60 (1990) 201
Serzu, M.H. and W.M. Moon, Two dimensional fast Fourier transform for large data matrices 52 (1989) 333
Serzu, M.H. and W.M. Moon, Dip-moveout by Fourier transform 52 (1989) 337
Sexton, E., see D.R. Quarrie 57 (1989) 325
Shadwick, B.A., J.D. Talman and M.R. Norman, A program to compute variationally optimized relativistic atomic potentials 54 (1989) 95
Shames, P.M.B., see A.M. Rushton 57 (1989) 427
Sherborne, B.S. and G.E. Stedman, Recursive generation of Cartesian angular momentum coupling trees for SO(3) 59 (1990) 417
Shimizu, Y., see K. Tobimatsu 55 (1989) 337
Shkarofsky, I., see M. Shoucri 55 (1989) 253
Shmakov, S.Yu., V.V. Uzhinskii and A.M. Zadorozhny, Diagen-generator of inelastic nucleus–nucleus interaction diagrams 54 (1989) 125

Shoucri, M., I. Shkarofsky, V. Fuchs, K. Kupfer, A. Bers and S. Luckhardt, A quasilinear Fokker–Planck code for the numerical solution of the lower-hybrid current-drive problem in the presence of electron cyclotron heating 55 (1989) 253
Shvets, V.F., see A.J. Dyachenko 60 (1990) 239
Sibert III, E.L., VANVLK: an algebraic manipulation program for canonical Van Vleck perturbation theory 51 (1988) 149
Silva, J., see A. Jejcic 57 (1989) 507
Simos, T.E., see J.R. Cash 56 (1990) 391
Singer, S.J., Multiparticle Monte Carlo moves: algorithm for solids with free-energy determination 59 (1990) 463
Skála, L., A new version of the program for the generation of symmetry-adapted functions for molecular calculations 58 (1990) 343
Skotniczny, Z., Query by Forms: user-oriented relational database retrieving system and its application in analysis of experiment data 57 (1989) 225
Slaets, J.F.W. and G. Travieso, Parallel computing: a case study 56 (1989) 63
Sliwa, K., CDF's experience with a parallel architecture multiprocessor system – ACP 57 (1989) 407
Smith, K. and A.H. Glasser, Data base of cross sections and reaction rates for hydrogen ion sources 54 (1989) 391
Smith, K., see A.H. Glasser 55 (1989) 409
Smith, R.K., see R.E. Bank 53 (1989) 201
Smith, W., see A.R.C. Raine 55 (1989) 13
Sobottka, S.E., R.J. Chandross, G.G. Cornick, B.D. Justice, R.S. Stewart and J.A. Thomas, Fast algorithm for identifying clusters in digitized images 51 (1988) 295
Soffel, M., see J. Schastok 54 (1989) 167
Sokal, A.D., see A. Berretti 58 (1990) 1
Sokalski, W.A., see A. Sawaryn 52 (1989) 397
Sonnad, V., see A. Capotondi 52 (1989) 195
Sonnad, V., see S. Foresti 53 (1989) 349
Sorantin, P., see P. Blaha 59 (1990) 399
Sordo, J.A., see S. Fraga 52 (1989) 445
Sornborger, A., see D. Cutts 57 (1989) 478
Souza, J., see C.M.L. Werner 57 (1989) 364
Sphicas, P., see S. Cittolin 57 (1989) 370
Spinelli, P., see M. Castellano 51 (1988) 431
Srinivasa Rao, K., V. Rajeswari and C.B. Chiu, A new Fortran program for the 9-*j* angular momentum coefficient 56 (1989) 231
Stanco, L., see H. Kowalski 57 (1989) 222
Stanco, L., Particle track recontruction in heavy materials with the Kalman technique 57 (1989) 380
Ständecke, K., see E. Ganssauge 55 (1989) 233
Stedman, G.E., see B.S. Sherborne 59 (1990) 417
Stefanou, N., H. Ákai and R. Zeller, An efficient numerical method to calculate shape truncation functions for Wigner–Seitz atomic polyhedra 60 (1990) 231
Stein, R.F., see Å. Nordlund 59 (1990) 119
Stenlund, E., see L. Ding 59 (1990) 313
Stewart, R.S., see S.E. Sobottka 51 (1988) 295
Storr, K.M., see S.P. Booth 57 (1989) 486
Story, C.M., Software engineering in industry 57 (1989) 217
Stroili, R., see ZEUS CDAQ Collaboration 57 (1989) 313

Stuart, R.G. and A. Góngora-T., Algebraic reduction of one-loop Feynman diagrams to scalar integrals. II 56 (1990) 337
Sufrin, B., Formal methods in system design and implementation 57 (1989) 108
Sugimoto, D., see T. Ito 60 (1990) 187
Sullivan, F., see J.G. Amar 55 (1989) 287
Sumpter, B.G., see D.W. Noid 51 (1988) 11
Sun, Y., see C. Duneczky 53 (1989) 357
Surguladze, L.R. and F.V. Tkachov, LOOPS: procedures for mulitloop calculations in quantum field theory for the REDUCE system 55 (1989) 205
Surguladze, L.R., see S.G. Gorishny 55 (1989) 381
Sutcliffe, B.T., see S. Carter 55 (1989) 71
Sutcliffe, B.T., S. Miller and J. Tennyson, An effective computational approach to the calculation of the vibration–rotation spectra of triatomic molecules 51 (1988) 73
Sytin, A.N., see V.P. Voevodin 57 (1989) 532

T Pack, R., see J.D. Kress 53 (1989) 91
T Pack, R., see J.D. Kress 53 (1989) 109
Takemasa, T., Abscissae and weights for the Gauss–Laguerre quadrature formula 52 (1988) 133
Talman, J.D., A program to compute variationally optimized effective atomic potentials 54 (1989) 85
Talman, J.D., see B.A. Shadwick 54 (1989) 95
Talwar, I. and L.E. Wright, The radiation tail accompanying elastic electron scattering from the atomic nucleus 55 (1989) 367
Tanaka, H., Numerical calculation of helicity amplitudes for processes involving massive fermions 58 (1990) 153
Tarancón, A., see N. Avico 57 (1989) 285
Taranov, A.Yu., see V.A. Ilyin 57 (1989) 505
Tarlini, M., see R. Cecchini 60 (1990) 265
Tarlini, M., see R. Cecchini 52 (1989) 283
Taulbjerg, K., see J.P. Hansen 51 (1988) 317
Tennyson, J., see S. Carter 55 (1989) 71
Tennyson, J., see B.T. Sutcliffe 51 (1988) 73
Tennyson, J. and S. Miller, A program suite for the calculation of ro-vibrational spectra of triatomic molecules 55 (1989) 149
Teo, K.H., W. Allegretto, J.N. McMullin and H.G. Schmidt-Weinmar, Self-consistent calculation of the density-of-states mass of holes in 2-D silicon structures 59 (1990) 277
Terasawa, T., see M. Scholer 59 (1990) 175
Tezduyar, T.E. and J. Liou, Grouped element-by-element iteration schemes for incompressible flow computations 53 (1989) 441
Thaler, J.J., Data-acquisition modeling and simulation 57 (1989) 309
Thomas, J.A., see S.E. Sobottka 51 (1988) 295
Thompson, G., see P. Biddulph 54 (1989) 13
Thompson, T.C., see S.C. Tucker 51 (1988) 233
Thornton, A.M., see S.P. Booth 57 (1989) 101
Thornton, A.M., see S.P. Booth 57 (1989) 486
Thouw, T., see H.J. Gils 56 (1989) 105
Thyagaraja, A. and D.F. Fletcher, The nonhyperbolicity of multiphase flow equations: a nonlinear nonproblem? 56 (1989) 115
Thyagaraja, A., Book review 56 (1989) 291

Tinsman, J., see D. Briggs 57 (1989) 273
Tishin, G.V., see V.P. Voevodin 57 (1989) 532
Tkachov, F.V., see L.R. Surguladze 55 (1989) 205
Tkachov, F.V., see S.G. Gorishny 55 (1989) 381
Tobimatsu, K. and Y. Shimizu, Radiative Bhabha scattering in special configurations with missing final e^+ and/or e^- 55 (1989) 337
Todesco, G.M., see N. Avico 57 (1989) 285
Tokushuku, K., see ZEUS CDAQ Collaboration 57 (1989) 313
Tomaschke, G.P., see A.A. Mirin 51 (1988) 373
Tong, C., see T.F. Chan 53 (1989) 237
Toomre, J., N. Brummell, F. Cattaneo and N.E. Hurlburt, Three-dimensional compressible convection at low Prandtl numbers 59 (1990) 105
Topaçli, C., Y. Gündüç and A. Aydinli, MULTI: a simulation program for laser processing of multilayer structures 52 (1988) 65
Torelli, M., see N. Avico 57 (1989) 285
Toussaint, D., Introduction to algorithms for Monte Carlo simulations and their application to QCD 56 (1989) 69
Toxvaerd, S., see J.J. Morales 56 (1989) 129
Tran, T.M. and J.S. Wurtele, TDA – a three-dimensional axisymmetric code for free-electron-laser (FEL) simulation 54 (1989) 263
Trasatti, L., see P. Bacilieri 57 (1989) 459
Travieso, G., see J.F.W. Slaets 56 (1989) 63
Travisano, J., see A.M. Rushton 57 (1989) 427
Treleaven, P. and M. Vellasco, Neural computing overview 57 (1989) 543
Trickey, S.B., see P. Blaha 59 (1990) 399
Tripiccione, R., see N. Avico 57 (1989) 285
Troemel, B., see D.R. Quarrie 57 (1989) 325
Tross, W., see N. Avico 57 (1989) 285
Troyon, F., see A.D. Turnbull 52 (1989) 303
Truhlar, D.G., see S.C. Tucker 51 (1988) 233
Truhlar, D.G., see C. Duneczky 53 (1989) 357
Tscheslog, E., see H. Kowalski 57 (1989) 222
Tucker, S.C., T.C. Thompson, J.G. Lauderdale and D.G. Truhlar, A vibrational configuration interaction program for energies and resonance widths 51 (1988) 233
Turnbull, A.D. and F. Troyon, Two variational forms of the MHD ballooning equation 52 (1989) 303

Unonius, L. and P. Paatero, Use of singular value decomposition for analyzing repetitive measurements 59 (1990) 225
Upadhyay, S.K., see I.P. Dubey 54 (1989) 23
Uzhinskii, V.V., see S.Yu. Shmakov 54 (1989) 125

Vaclavik, J., see X. Llobet 59 (1990) 199
Vagi, J., see U. Chandra 57 (1989) 263
Valente, E., see P. Bacilieri 57 (1989) 459
Valentini, S., see P. Bacilieri 57 (1989) 459
Van der Linden, R.A.M., M. Goossens and W. Kerner, A combined finite element/Fourier series method for the numerical study of the stability of line-tied magnetic plasmas 59 (1990) 61
Van der Vorst, H.A., ICCG and related methods for 3D problems on vector computers 53 (1989) 223

Van Herwijnen, E., The use of text interchange standards for submitting physics articles to journals 57 (1989) 244
Van Hoven, G., see D.D. Schnack 59 (1990) 21
Van Silfhout, A., see H. Wormeester 52 (1988) 19
Van Vechten, J.A., see U. Schmid 58 (1990) 329
Vande Linde, S.R. and W.L. Hase, Dynamics of ion–molecule recombination. IV. $Li^+ + (CH_3)_2O$ association 51 (1988) 17
Vande Vyvre, P., see D.M. Sendall 57 (1989) 343
Vandoni, C.E., see R. Brun 57 (1989) 432
Varela, J., see F. Barao 57 (1989) 358
Varela, J., see C.M.L. Werner 57 (1989) 364
Varias, A., An extension of the HERA code to flux coordinate equilibria 52 (1989) 167
Vasconcelos, G.L., see M.A.F. Gomes 54 (1989) 257
Vascotto, A., see D.M. Sendall 57 (1989) 343
Vellasco, M., see P. Treleaven 57 (1989) 543
Velli, M., see P. de Bruyne 59 (1990) 55
Velli, M., R. Grappin and A. Mangeney, Solar wind expansion effects on the evolution of hydromagnetic turbulence in the interplanetary medium 59 (1990) 153
Ventura, A., see V. Rosato 54 (1989) 251
Vergini, E.G., see A. Etchegoyen 55 (1989) 227
Vermeulen, J.C., see ZEUS Collaboration 57 (1989) 316
Vertes, P., FEDMIX: neutron transmission functions and lumped averaged cross-sections from standarized evaluated neutron data 56 (1989) 199
Vesztergombi, G., see NA-35 Collaboration 57 (1989) 290
Vigneron, J.-P., see Ph. Lambin 60 (1990) 351
Villar, H.O., see M. Dupuis 52 (1989) 415
Villarreal, P., see D.M. Leitner 51 (1988) 207
Vinette, F. and J. Čížek, Perturbation energy expansion using hypervirial theorem and symbolic computation for the N-dimensional hydrogen atom in an external spherically symmetric field 52 (1988) 35
Virasoro, M.A., Disordered models of the brain 56 (1989) 93
Voevodin, V.P., V.N. Govorun, A.M. Davidenko, An.V. Ekimov, N.S. Ivanova, V.I. Kovaltsov, Yu.M. Kozyaev, A.F. Lukyantsev, M.Yu. Matveev, V.A. Senko, A.N. Sytin and G.V. Tishin, The 780/E 32-bit specialized processor-emulator 57 (1989) 532
Vogel, W., see ZEUS CDAQ Collaboration 57 (1989) 313
Vogt, H., see D.Yu. Bardin 59 (1990) 303
Vohwinkel, C., A fast method to gather neighbors in vectorized Monte Carlo simulations 51 (1988) 323
Vohwinkel, C., B.A. Berg and A. Devoto, A fast CYBER 205 – ETA^{10} program for SU(3) lattice gauge theory 51 (1988) 331
Vrba, V., The Monte Carlo integration of cylindrical phase-space with leading particles 56 (1989) 165
Vvedensky, D.D., see J.M. MacLaren 60 (1990) 365

Walker, H.F., Implementations of the GMRES method 53 (1989) 311
Wallace, D.J., see S.P. Booth 57 (1989) 101
Wallace, R., see K. Davie 51 (1988) 217
Wallace, R., see K. Davie 55 (1989) 463
Wan, T.C., see S. Youssef 57 (1989) 251

Wan Abdullah, W.A.T., Connectionist architectures for triggering and track reconstruction 57 (1989) 472
Wang, C.-J. and C.-H. Wu, Concurrent and vectorized Monte Carlo simulation of the evolution of an assembly of particles increasing in number 58 (1990) 63
Wang, S.C., C.K. Chan and S.P. Li, A vectorized algorithm on the ETA-10Q for MD simulation of particles in a box interacting by long-ranged forces 60 (1990) 181
Ward, B.F.L., see S. Jadach 56 (1990) 351
Watase, Y., High energy physics computing in Japan 57 (1989) 198
Watts, J.D., see M. Dupuis 52 (1989) 415
Weaire, D., see J.P. Kermode 60 (1990) 75
Weaver, D., see D.M. Sendall 57 (1989) 343
Weniger, E.J. and J. Cížek, Rational approximations for the modified Bessel function of the second kind 59 (1990) 471
Werley, K.A., see M.-Y. Hsiao 54 (1989) 329
Werner, C.M.L., M. Pimenta, J. Varela and J. Souza, FADO 2.0: a high level tagging language 57 (1989) 364
Whalley, M.R., The Durham-RAL high energy physics databases – HEPDATA 57 (1989) 536
White, A., see P. Avery 57 (1989) 422
White, B., The comparison and selection of programming languages for high energy physics applications 57 (1989) 538
White, V., Distributed data-acquisition systems (PAN-DA) for Fermilab experiments 57 (1989) 348
Whitmore, J., see ZEUS CDAQ Collaboration 57 (1989) 313
Whitnell, R.M., see Z. Bačić 51 (1988) 35
Wiegandt, D., UNIX and HEP 57 (1989) 134
Wierzbicki, A. and J.M. Bowman, GVSCF: a general code to perform vibrational self-consistent field calculations 51 (1988) 225
Wiese, U.-J., see A.S. Kronfeld 54 (1989) 109
Wiest, R., see M.-M. Rohmer 60 (1990) 127
Wiggers, L.W., see ZEUS CDAQ Collaboration 57 (1989) 313
Wiggers, L.W., see ZEUS Collaboration 57 (1989) 316
Wilderman, S., see S. Youssef 57 (1989) 251
Willard, L., see A.M. Rushton 57 (1989) 427
Williams, D.O., Computing on the eve of LEP data-taking: are we ready? 57 (1989) 8
Williams, R.D., see C.F. Baillie 58 (1990) 105
Willoughby, R., see J. Cullum 53 (1989) 19
Wilson, S., see D. Moncrieff 55 (1989) 31
Wilson, S., Universal basis sets and Cholesky decomposition of the two-electron integral matrix 58 (1990) 71
Winstead, C.L., see T.J. Gil 53 (1989) 123
Woodruff, S.B., see J.D. Kress 53 (1989) 109
Wormeester, H., A.G.B.M. Sasse and A. van Silfhout, Deconvolution, differentiation and Fourier Transformation algorithms for noise-containing data based on splines and global approximation 52 (1988) 19
Wright, L.E., see I. Talwar 55 (1989) 367
Wu, C.-H., see C.-J. Wang 58 (1990) 63
Wu, E.Y. and R.J. Friauf, Techniques for achieving thermal equilibrium in molecular dynamics calculations for solids 59 (1990) 259
Wurtele, J.S., see T.M. Tran 54 (1989) 263

Würtz, D. and G. Hartung, Neural computing on a system of parallel organized transputers: software implementation and hardware configuration 56 (1989) 155
Wyatt, R.E., see C. Duneczky 53 (1989) 357

Yannouleas, C. and J.M. Pacheco, An algebraic program for the states associated with the U(5) ⊃ O(5) ⊃ O(3) chain of groups 52 (1988) 85
Yannouleas, C. and J.M. Pacheco, Algebraic manipulation of the states associated with the U(5) ⊃ O(5) ⊃ O(3) chain of groups: orthonormalization and matrix elements 54 (1989) 315
Yasu, Y., see Y. Karita 57 (1989) 455
Young, D.M., A historical overview of iterative methods 53 (1989) 1
Yousif, H.A. and S. Köhler, A Fortran code for the scattering of EM plane waves by two cylinders at normal incidence 59 (1990) 371
Youssef, S., W. Martin, T.C. Wan and S. Wilderman, A vectorized Monte Carlo detector simulation program for electromagnetic interactions 57 (1989) 251
Yuasa, F., see Y. Karita 57 (1989) 455

Zadorozhny, A.M., see S.Yu. Shmakov 54 (1989) 125
Zahran, E.S., see M.M. Mustafa 55 (1989) 109
Zaman, A., see G. Marsaglia 60 (1990) 345
Zanarini, P., see R. Brun 57 (1989) 432
Zeller, R., see N. Stefanou 60 (1990) 231
Zeller, R.T., see D. Cutts 57 (1989) 339
Zeller, R.T., see D. Cutts 57 (1989) 478
Zeller, S., see A.M. Rushton 57 (1989) 427
ZEUS CDAQ Collaboration, P. Erhard, J. Ficenec, K. Gather, G. Heath, M. Iacovacci, J. Kehres, R. Loveless, M. Mobayyen, D. Notz, R.S. Orr, A. Sephton, R. Stroili, K. Tokushuku, W. Vogel, J. Whitmore and L.W. Wiggers, ZEUS hardware control system 57 (1989) 313
ZEUS CDAQ Collaboration, S. Bhadra, M. Crombie, D. Kirkby and R.S. Orr, The ZEUS third-level trigger system 57 (1989) 321
ZEUS Collaboration, L.W. Wiggers and J.C. Vermeulen, The use of transputers in the ZEUS online system 57 (1989) 316
Zheng, Q.-R., see J.-L. Ping 52 (1989) 355
Zhu, S.-B. and G.W. Robinson, Molecular dynamics study of liquid carbon dioxide 52 (1989) 317
Zlokazov, V.B., GFIT – generalized quadratic approximation of functions under constraints 54 (1989) 371
Zlokazov, V.B., Analysis of hidden anharmonic periodicities 59 (1990) 217
Zurek, S., see R.J. Allan 59 (1990) 325

Program index to volumes 1–60

1. Astronomy and astrophysics

1.1. Cosmic rays

CASCADE (Fortran, 946*). A program for the analytic simulation of extensive air showers. L. Goorevich — AAYF 7 (1974) 344

EMCASR (Fortran, 730). A set of subroutines for simulation of electron–photon cascades. T. Stanev, Ch. Vankov — AAUV 16 (1979) 363

000A CORRECTION 08/05/79 (Fortran). Unpublished correction

1.2. Nuclear processes

No programs classified under this heading yet.

1.3. Radiative transfer

ABELA (Fortran, 413). Calculation of the radial distribution of emitters in a cylindrical source. R. Piessens — ABUE 5 (1973) 294

TRANSPHERE (Fortran, 1808). Numerical evaluation of the formal solution of radiative transfer problems in spherical geometries. D.G. Hummer, C.V. Kunasz, P.B. Kunasz — AAAB 6 (1973) 38

PROFILE (Fortran, 1149). PROFILE: a code for evaluating line profile shapes for optically thick expanding plasmas. G.J. Tallents — AARK 25 (1982) 141

Other version: ABBQ (§1.3) — AAEJ 28 (1983) 337

MAXWEL (Fortran, 914). MAXWEL: exact photon cross section processor for relativistic Maxwellian electrons. B.L. Lathrop, B.R. Wienke — ACCF 32 (1984) 309

CSDUST3 (Fortran, 3943). CSDUST3: a radiation transport code for a dusty medium with 1-D planar, spherical or cylindrical geometry. M.P. Egan, C.M. Leung, G.F. Spagna Jr. Other version: AAEJ (§1.3) — ABBQ 48 (1988) 271

1.4. Radio astronomy

HYDROGENIC RECOMBINATION COEFFS (Fortran, 306). A program to calculate radiative recombination coefficients of hydrogenic ions. D.R. Flower, M.J. Seaton — ACQD 1 (1969) 31

ILTHII (Fortran, 4016). ILTHII – analysis of the spectrum of a thermal radioastronomical source. M. Salem — AAEF 9 (1975) 247

RCMBLN (Fortran, 1239). Computation of line and continuum radiation from thermal radioastronomical sources. M. Brocklehurst, M. Salem. Subroutine required (for data): AAEH (§1.4) — AAEG 9 (1975) 258

SELECT BN,CN VALUES (Fortran, 3864). Computation of line and continuum radiation from thermal radioastronomical sources. M. Brocklehurst, M. Salem — AAEH 9 (1975) 259

GENERAL BN PROGRAM (Fortran, 1297). Radio recombination lines from H+ regions and cold interstellar clouds: computation of the bn factors. M. Brocklehurst, M. Salem — ACXI 13 (1977) 39

1.5. Relativity and gravitation

WATER BAG MODEL (Fortran, 1056). A numerical code for multiple water bag gravitational systems. S. Cuperman, A. Harten — ACRU 8 (1974) 307

TAVI (Reduce, 170). A REDUCE program for the calculation of geometrical characteristics of compactified multidimensional Riemannian space. A.P. Demichev, A.Ya. Rodionov — AADJ 38 (1985) 441

GLE2000 (Fortran, 1764). The ephemeris program GLE2000. J. Schastok, H. Gleixner, M. Soffel, H. Ruder, M. Schneider — ABHM 54 (1989) 167

1.6. Solar physics

AATWAB (Fortran, 2046). A program to calculate coronal emission line strengths. P.L. Dufton — ACXE 13 (1977) 25

---

* Number of lines in program.

ALFVEN (Fortran, 2463). ALFVEN: a two-dimensional code based on SHASTA, solving the radiative, diffusive MHD equations. W.J. Weber, J.P. Boris, J.H. Gardner — ABUX 16 (1979) 243
000A CORRECTION 26/09/80 (Fortran) — 21 (1981) 437

1.7. Stars and stellar systems

BIN DYN (Algol, Usercode, 1046). Derivation of the orbit of a double star from observations made with an intensity interferometer. D. Herbison-Evans — AACD 2 (1971) 59
BISPEC (Algol, 652). Analysis of a variable spectroscopic double star. D. Herbison-Evans, N.R. Lomb — AACE 2 (1971) 368
MAGBIN (Algol, 796). The light curve of a variable star subject to orbital tidal distortion. D. Herbison-Evans — AACG 5 (1973) 315
TOROID (Fortran, 1652). Calculation of the equilibrium structure and oscillations of polytropic stars pervaded by toroidal magnetic fields. M.J. Miketinac. Other version: AAAI (§1.7) — AAAE 7 (1974) 410
POLOID (Fortran, 2350). Calculation of the form of an equilibrium poloidal magnetic field contained in a polytropic star. G.B. Brundrit, M.J. Miketinac. Other version: AAAE (§1.7) — AAAI 11 (1976) 385
COSTANTI DEL MOTO (Fortran, 785). A computer program for integrals of motion. A. Giorgilli — ACYO 16 (1979) 331
BINARY (Fortran, 1907). Shape of a polytropic primary. M.J. Miketinac, J. Miketinac — AAEI 27 (1982) 285
CELESTE AND STELLA (Fortran, 3912). Programs "CELESTE" and "STELLA" for computations in special relativity: evaluation of the celestial view from an interstellar spacecraft. E. Sheldon, R.H. Giles — AACI 29 (1983) 269
TLUSTY (Fortran, 9834). A computer program for calculating non-LTE model stellar atmospheres. I. Hubeny — ABFK 52 (1988) 103

1.8. Interstellar medium

GENERAL BN PROGRAM (Fortran, 1297). Radio recombination lines from H+ regions and cold interstellar clouds: computation of the bn factors. M. Brocklehurst, M. Salem — ACXI 13 (1977) 39
MHD (Fortran, 4584). A computer program for calculating the structure of magnetohydrodynamical shocks in interstellar clouds. L. Heck, D.R. Flower, G. Pineau Des Forets — ABLS 58 (1990) 169

2. Atomic physics

2.1. Structure and properties

SOCKITTOME 1 (Fortran, 3243). Relativistic and non-relativistic configuration interaction calculations for atoms having a closed core and two valence spin-orbitals. D.R. Beck, R.N. Zare — AAKA 1 (1969) 113
Other versions: ACRF (§2.1), ACYA (§2.1), AATK (§2.1) — ACQJ 1 (1969) 151
H.F.S. SELF CONSISTENT FIELD (Fortran, 635). Hartree Fock Slater self consistent field calculations. J.P. Desclaux — ACQI 1 (1970) 216
0001 ADAPT HFS FOR MSXALPHA (Fortran, 254). An adaptation of ACQI to calculate the data for MSXALPHA program. M. Klobukowski — 25 (1982) 29
SPSS-ATOMIC Z-EXPANSION E2 PRIME (Fortran, 1911). Single-particle substitution sums in the second-order Z-expansion theory of atomic energies. M.N. Lewis — AACC 1 (1970) 265
000A CORRECTION 27/07/70 (Fortran) — 1 (1970) 469
HEX (Fortran, 1333). Relativistic self-consistent field program for atoms and ions. D.A. Liberman, D.T. Cromer, J.T. Waber — AAKB 2 (1971) 107
000A CORRECTION 11/08/71 (Fortran) — 2 (1971) 471
000B CORRECTION 02/09/71 (Fortran) — 2 (1971) 471
000C CORRECTION 18/11/74 (Fortran) — 9 (1975) 129
LEVEL (Fortran, 2521). Calculation of atomic energy level values. L.J. Radziemski Jr., K.J. Fisher, D.W. Steinhaus, A.S. Goldman — AAKD 3 (1972) 9
CALOR (Fortran, 309). Wave number calculation from least-squares level values. L.J. Radziemski Jr., K.J. Fisher, D.W. Steinhaus, A.S. Goldman. Subroutine required (for data): AAKD (§2.1) — AAKE 3 (1972) 19
Other versions: ACQJ (§2.1), ACYA (§2.1), AATK (§2.1) — ACRF 4 (1972) 107
BACK-GOUDSMIT (Fortran, 400). A program for computing level crossings and the Back-Goudsmit effect. P. Violino — ACRD 4 (1972) 128
000A CORRECTION 27/1/77 (Fortran) — 13 (1977) 137
HERSKLZARE (Fortran, 3445). A non-relativistic SCF atomic program to compute one-electron energies, total energies, and Slater integrals. J.H. Wood, M. Boring — AAKG 7 (1974) 73

Atomic physics — *Structure and properties (continued)*

000A CORRECTION 5/09/75 (Fortran) 10 (1976) 434

FIXED CORE HARTREE-FOCK (Fortran, 2140). A fixed core Hartree–Fock program for calculating bound and continuum orbitals. G.N. Bates ACRX 8 (1974) 220

MULTICONFIGURATION DIRAC-FOCK (Fortran, 4434). A multiconfiguration relativistic Dirac–Fock program. J.P. Desclaux. Subroutines required (for data): ACRI (§4.1), ACWE (§2.9), AAHD (§4.1) ACRV 9 (1975) 31

000A CORRECTION 4/01/75 (Fortran). Unpublished correction

000B CORRECTION 7/12/76 (Fortran) 13 (1977) 71

CIV3 A GENERAL C.I. PROGRAM (Fortran, 5583). CIV3 – a general program to calculate configuration interaction wave functions and electric-dipole oscillator strengths. A. Hibbert. Subroutines required: ACQB (§4.1), ACRN (§4.1), AAHD (§4.1), ACQV (§2.9), ACQV0001, ACQV0002, AAKF (§4.1) AAKM 9 (1975) 141

000A CORRECTION 26/1/76 (Fortran) 10 (1976) 436

0001 ADAPT CIV3 FOR HFS (Fortran, 880). Adaptation of CIV3 to evaluate hyperfine structure. R. Glass, A. Hibbert. Subroutines required: ACQB (§4.1), ACRN (§4.1), AAHD (§4.1), ACQV (§2.9), ACQV0001, ACQV0002, AAKF (§4.1), AAKF0001 11 (1976) 125

GF VALUES (Fortran, 903). Oscillator strengths from numerical MCHF radial functions. C.F. Fischer, K.M.S. Saxena. Subroutines required (for data): ACRF (§2.1), AAKP (§4.1), ACQB (§4.1), ACRN (§4.1), AAHD (§4.1) ACRZ 9 (1975) 381

0001 QUADRUPOLE TRANSITIONS (Fortran, 478). An adaptation of ACRZ to calculate electric quadrupole oscillator strengths. M. Godefroid. Subroutines required: ACRF (§2.1) or AAKP (§4.1), (for data): ACQB (§4.1), ACRN (§4.1), AAHD (§4.1) 15 (1978) 275

A00A CORRECTION TO 0001 01/03/79 (Fortran) 17 (1979) 426

A00B CORRECTION TO 0001 26/02/86 (Fortran) 41 (1986) 195

ATOMIC SCF HARTREE-FOCK (Algol, 428). Self-consistent field Hartree–Fock program for atoms. L.V. Chernysheva, N.A. Cherepkov, V. Radojevic AAKQ 11 (1976) 57

MBPT ORGANIZATION (Fortran, 1454). Diagrammatic many-body perturbation expansion for atoms and molecules: I. General organization. D.M. Silver. Subroutines required: ACXG (§2.1), ACXH (§2.1) ACXF 14 (1978) 71

MBPT LADDER DIAGRAMS (Fortran, 794). Diagrammatic many-body perturbation expansion for atoms and molecules: II. Second-order and third-order ladder energies. D.M. Silver. Subroutines required: ACXF (§2.1), ACXH (§2.1) ACXG 14 (1978) 81

MBPT RING DIAGRAMS (Fortran, 739). Diagrammatic many-body perturbation expansion for atoms and molecules: III. Third-order ring energies. S. Wilson. Subroutines required: ACXF (§2.1), ACXG (§2.1) ACXH 14 (1978) 91

Other versions: ACQJ (§2.1), ACRF (§2.1), AATK (§2.1) ACYA 14 (1978) 145

TERM (Fortran, 7994). I. Generator of determinantal non-relativistic atomic states from spectroscopic notation. Computation of matrix elements. J.J. Labarthe AAKU 16 (1979) 285

EXCGH (Fortran, 4048). II. Generator of atomic excited terms from angular considerations. J.J. Labarthe. Subroutine required (for data): AAKU (§2.1) AAKV 16 (1979) 301

EDD (Fortran, 7087). III. Analytic approximations of radial orbitals for multiconfigurational Hartree–Fock computations. J.J. Labarthe. Subroutines required (for data): AAKV (§2.1), AAKU (§2.1) AAKW 16 (1979) 311

0001 QFO (Fortran, 1071). IV. Approximation of numerical orbitals by Slater functions. J.J. Labarthe 16 (1979) 325

ATOMIC FROZEN CORE HARTREE-FOCK (Algol, 571). Frozen core Hartree–Fock program for atomic discrete and continuous states. L.V. Chernysheva, N.A. Cherepkov, V. Radojevic. Subroutine required (for data): AAKQ (§2.1) AAKZ 18 (1979) 87

SSTR-TRANSITION GENERALIZED SUMS (Fortran, 2988). Z-expansion of matrix elements of one-electron operators for many-electron atoms. M.N. Lewis AACH 18 (1979) 109

RPA TWO ELECTRON EIGENFUNCTION (Fortran, 566). A program to calculate the eigenfunctions of the random phase approximation for two electron systems. M.J. Jamieson, I.H.K. Aldeen AAJD 20 (1980) 213

CPOLAR (Fortran, 1405). Energy eigenvalues and bound-bound transitions of hydrogen atoms in a magnetic field using cylindrical basis functions. S.M. Kara AAHK 20 (1980) 221

MCDF (Fortran, 11151). An atomic multiconfigurational Dirac–Fock package. I.P. Grant, B.J. McKenzie, P.H. Norrington, D.F. Mayers, N.C. Pyper. Subroutines required: AAHD (§4.1), ACRI (§4.1) AANC 21 (1980) 207

MCBP/BENA (Fortran, 2858). A program to calculate transverse Breit and QED corrections to energy levels in a multi-configuration Dirac–Fock environment. B.J. McKenzie, I.P. Grant, P.H. Norrington. Subroutine required: AANC (§2.1) AAND 21 (1980) 233

000A CORRECTION 27/04/81 (Fortran) 23 (1981) 222

Atomic physics — *Structure and properties (continued)*

HSCF (Fortran, 2393). An atomic Gaussian-type orbital Roothaan–Hartree–Fock program. S. Huzinaga, M. Klobukowski, Y. Sakai — AAFI 30 (1983) 311

INTERACTING CONFIGURATIONS (Fortran, 1663). Determination of interacting configurations. D. Ridder — ACFZ 31 (1984) 423

GOLIATH (Fortran, 1900). A nonrelativistic program for optical response in atoms using a time-dependent local density approximation. A. Zangwill, D.A. Liberman — AAML 32 (1984) 63

DAVID (Fortran, 1816). A relativistic program for optical response in atoms using a time-dependent local density approximation. D.A. Liberman, A. Zangwill — AAMM 32 (1984) 75

REDUCED LOCAL ENERGY FOR ATOMS (Fortran, 1135). Reduced local energy for atomic Hartree–Fock wavefunctions. F.W. King, M.K. Kelly, M.A. LeGore, M.E. Poitzsch — ACCE 32 (1984) 215

HF86 (Fortran, 4205). General Hartree–Fock program. C.F. Fischer. Other versions: ACQJ (§2.1), ACRF (§2.1), ACYA (§2.1) — AATK 43 (1987) 355

RIAS (Fortran, 12551). Research in atomic structure: a configuration interaction program with relativistic corrections. S. Fraga, M. Klobukowski, J. Muszynska, K.M.S. Saxena, J.A. Sordo, J.D. Climenhaga, P. Clark — ABBB 47 (1987) 159

000A CORRECTION 07/09/88 (Fortran) — 52 (1989) 445

HONDO VERSION 7.0 (Fortran, 97320, Manual 155 pages). The general atomic and molecular electronic structure system HONDO: version 7.0. M. Dupuis, J.D. Watts, H.O. Villar, G.J.B. Hurst — ABFS 52 (1989) 415

ATOMOPM (Fortran, 947). A program to compute variationally optimized effective atomic potentials. J.D. Talman — ABHT 54 (1989) 85

DIRACATOMOPM (Fortran, 1121). A program to compute variationally optimized relativistic atomic potentials. B.A. Shadwick, J.D. Talman, M.R. Norman — ABHU 54 (1989) 95

GRASP (Fortran, 94872). GRASP: a general-purpose realtivistic atomic structure program. See erratum Comput. Phys. Commun. 58 (1990) 345. K.G. Dyall, I.P. Grant, C.T. Johnson, F.A. Parpia, E.P. Plummer — ABJN 55 (1989) 425

2.2. Spectra

RITZ COMBINATION PRINCIPLE (Fortran, 113). Program for fitting transition energies into a level scheme according to the combination principle. I.R. Williams — ABKD 1 (1970) 465

COMPTON CROSS SECTIONS (Fortran, 762). Non-relativistic form factor program for Compton scattering of gamma rays by bound electrons. F. Smend, M. Schumacher — ACWW 11 (1976) 363

BREMSSTRAHLUNG INTENSITY (NR) (Fortran, 301). A program for calculating the angular distribution of nonrelativistic bremsstrahlung intensity. A. Banuelos, F. Rodriguez-Trelles — ACYJ 15 (1978) 125

0001 BREMSSTRAHLUNG INTENSITY 2 (Fortran, 245). Extension to high frequencies of a program for calculating the angular distribution of nonrelativistic bremsstrahlung. A. Banuelos, F. Rodriguez-Trelles, L. Bilbao — 17 (1979) 305

MQDTAC (Fortran, 2537). A program for analysing the Rydberg series of highly excited discrete spectra by M.Q.D.T. O. Robaux, M. Aymar — AANQ 25 (1982) 223

AUGER-TRANSITIONS CLASSIFICATION (Fortran, 1292). Classification of Auger-transitions in LS-coupling. D. Ridder — AAOV 28 (1982) 201

BREMPNT (Fortran, 323). Bremsstrahlung cross section for a point, spinless target. A. Minter, D.A. Jenkins — ABRV 59 (1990) 499

2.3. Experimental analysis

SYNCHROTRON RADIATION (Fortran, 321). Spectral intensity, angular distribution and polarisation of synchrotron radiation from a monoenergetic electron. J. Lang — ACQR 1 (1970) 440

CALOR (Fortran, 309). Wave number calculation from least-squares level values. L.J. Radziemski Jr., K.J. Fisher, D.W. Steinhaus, A.S. Goldman. Subroutine required (for data): AAKD (§2.1) — AAKE 3 (1972) 19

Other versions: AAGX (§2.3), AAGZ (§2.3), AAHI (§2.3), AANN (§2.3), ACKX (§7.4) — AAGK 3 (1972) 240

HOMER (Fortran, 2026). A program for the extraction of radiative lifetimes from experimental beam-foil intensity decay data. D.J.G. Irwin, A.E. Livingston — AAED 7 (1974) 95

Other versions: AAGK (§2.3), AAGZ (§2.3), AAHI (§2.3), AANN (§2.3), ACKX (§7.4) — AAGX 7 (1974) 401

DBLCON (Fortran, 1336). DBLCON: a version of POSITRONFIT with non-Gaussian prompt for analysing positron lifetime spectra. W.K. Warburton. Other versions: AAGK (§2.3), AAGX (§2.3), AAHI (§2.3), AANN (§2.3), ACKX (§7.4) — AAGZ 13 (1977) 371

Atomic physics — *Experimental analysis (continued)*

INTERACTIVE POSITRONFIT (Fortran, 1367). INTERACTIVE POSITRONFIT: a new version of a program for analysing positron lifetime spectra. C.J. Virtue, R.J. Douglas, B.T.A. McKee. Other versions: AAGK (§2.3), AAGX (§2.3), AAGZ (§2.3), AANN (§2.3), ACKX (§7.4) AAHI 15 (1978) 97

PATFIT (Fortran, 5599). Program system for analysing positron lifetime spectra and angular correlation curves. P. Kirkegaard, M. Eldrup, O.E. Mogensen, N.J. Pedersen. Other versions: AAGK (§2.3), AAGX (§2.3), AAGZ (§2.3), AAHI (§2.3), ACKX (§7.4) AANN 23 (1981) 307

MONIT (Fortran, 11769). A spectrum data processing system. T.P. Hult, S.P. Svensson, T.G. Andersson AARV 25 (1982) 417

POSDIF (Fortran, 903). POSDIF: a program to compute positron diffusion and annihilation in rare gases. R.I. Campeanu AAHN 25 (1982) 433

SYNCHR88 (Fortran, 777). Synchrotron radiation flux at experimental stations. J.S. Reid ABJB 54 (1989) 307

2.4. Electron scattering

Other version: ACRK (§2.4) ACQE 1 (1969) 88

SIMMEG (Fortran, 698). Collision strengths from reactance matrices. H.E. Saraph AAGB 1 (1970) 232

0001 ADAPT AAGB FOR CDC 6600 (Fortran, 15). Unpublished adaptation to adapt SIMMEG for CDC 6600. H.E. Saraph. Unpublished correction

ATOMNP (Fortran, 4320). A computer program for the calculation of electron scattering and photoionization cross sections of atomic systems with configuration (np)q. See erratum Comput. Phys. Commun. 1 (1970) 470. M.J. Conneely, L. Lipsky, K. Smith, P.G. Burke, R.J.W. Henry AAIA 1 (1970) 306

A SCAT (Fortran, 635). A program for calculating relativistic elastic electron-atom collision data. A.C. Yates ACQX 2 (1971) 175

SCATTERING AMPLITUDES (Fortran, 675). Amplitudes for scattering of electrons by hydrogenic and alkali-like atomic systems. D.L. Moores AAGH 2 (1971) 360

000A CORRECTION 24/8/84 (Fortran) 34 (1984) 224

Other version: ACYG (§2.4) AAGJ 3 (1972) 256

ASYM VERSION FOR ICL 1900 (Fortran, 1202). A new version of the program to compute the asymptotic solution of coupled equations for electron scattering. A.T. Chivers. Other version: ACQE (§2.4) ACRK 5 (1973) 416

SHIFTA (Fortran, 2018). Phase shift analysis and consistency checks on electron-atom collision data. P.F. Naccache, M.R.C. McDowell AAGV 6 (1973) 77

POLORB (Fortran, 1722). Electron impact excitation cross sections. M.R.C. McDowell, L. Morgan, V.P. Myerscough AAGW 7 (1974) 38

Other versions: AAHF (§2.4), AANR (§2.4) AAHA 8 (1974) 149

Other versions: AAHG (§2.4), AANS (§2.4) AAHB 8 (1974) 150

Other versions: AAHH (§2.4), AANV (§2.4) AAHC 8 (1974) 150

LAG 1 (Fortran, 1587). A program for calculating elastic scattering phase shifts for an electron colliding with a one-electron target using perturbation theory. E. McGreevy, A.L. Stewart ACYD 14 (1978) 99

A NEW VERSION OF RMATRX STG1 (Fortran, 5119). A new version of the general program to calculate atomic continuum processes using the R-matrix method. K.A. Berrington, P.G. Burke, M. Le Dourneuf, W.D. Robb, K.T. Taylor, Vo Ky Lan. Subroutines required: AAHG (§2.4), AAHH (§2.4). Other versions: AAHA (§2.4), AANR (§2.4) AAHF 14 (1978) 367

A NEW VERSION OF RMATRX STG2 (Fortran, 10154). A new version of the general program to calculate atomic continuum processes using the R-matrix method. K.A. Berrington, P.G. Burke, M. Le Dourneuf, W.D. Robb, K.T. Taylor, Vo Ky Lan. Subroutines required: AAHF (§2.4), AAHH (§2.4). Other versions: AAHB (§2.4), AANS (§2.4) AAHG 14 (1978) 367

A NEW VERSION OF RMATRX STG3 (Fortran, 7244). A new version of the general program to calculate atomic continuum processes using the R-matrix method. K.A. Berrington, P.G. Burke, M. Le Dourneuf, W.D. Robb, K.T. Taylor, Vo Ky Lan. Subroutines required: AAHF (§2.4), AAHG (§2.4). Other versions: AAHC (§2.4), AANV (§2.4) AAHH 14 (1978) 367

0001 R-MATRIX POLARIZABILITIES (Fortran, 428). R-matrix dynamic dipole polarizabilities. P. Shorer. Subroutines required: AAHF (§2.4), AAHG (§2.4), AAHH (§2.4) 22 (1981) 467

IMPACT (Fortran, 6762). IMPACT: a program for the solution of the coupled integro-differential equations of electron-atom collision theory. M.A. Crees, M.J. Seaton, P.M.H. Wilson. Subroutine required: ACYF (§2.4). Other version: ACZK (§2.4) ACYE 15 (1978) 23

IMPPRO (Fortran, 705). Preprocessor for IMPACT: a program for the solution of the coupled integro-differential equations of electron-atom collision theory. M.A. Crees, M.J. Seaton, P.M.H. Wilson ACYF 15 (1978) 23

Atomic physics — *Electron scattering (continued)*

0001 ADAPT IMPPRO FOR ECSIMPACT (Fortran, 39). Preprocessor for ECSIMPACT: a special version of program IMPACT for CDC machines with ex-core memory. H.E. Saraph — 18 (1979) 287

JAJOMPRE (Fortran, 2835). Fine structure cross sections from reactance matrices: a more versatile development of the program JAJOM. H.E. Saraph. Other version: AAGJ (§2.4) — ACYG 15 (1978) 247

LSTOIC (Fortran, 1238). Intermediate coupling collision strengths from LS coupled R-matrix elements. R.E.H. Clark — AAKY 16 (1978) 119

ECSIMPACT (Fortran, 6862). ECSIMPACT: a special version of program IMPACT for CDC machines with ex-core memory. T.M. Luke, H.E. Saraph. Subroutines required: ACYF (§2.4), ACYF0001. Other version: ACYE (§2.4) — ACZK 18 (1979) 287

Other version: AANK (§2.4) — AAJA 19 (1980) 103

Other version: AANL (§2.4) — AAJB 19 (1980) 103

ASYPCK2 (Fortran, 4398). ASYPCK2, an extended version of ASYPCK. M.A. Crees. Subroutine required: AANL (§2.4). Other version: AAJA (§2.4) — AANK 23 (1981) 181

ASYPRO2 (Fortran, 773). Preprocessor for ASYPCK2, an extended version of ASYPCK. M.A. Crees. Other version: AAJB (§2.4) — AANL 23 (1981) 181

ASYSLIM (Fortran, 194). A streamlined version of ASYPCK2, an extended version of ASYPCK. M.A. Crees. Subroutines required: AANK (§2.4), AANL (§2.4) — AANM 23 (1981) 181

NIEM POTC1 (Fortran, 6393). A general program to calculate atomic continuum processes using the NIEM method. R.J.W. Henry, S.P. Rountree, E.R. Smith. Subroutines required: AAJH (§2.4), AAJI (§2.4), ACWN0001 — AAJG 23 (1981) 233

NIEM NIES2 (Fortran, 3162). A general program to calculate atomic continuum processes using the NIEM method. R.J.W. Henry, S.P. Rountree, E.R. Smith. Subroutines required: AAJG (§2.4), AAJI (§2.4), ACWN0001 — AAJH 23 (1981) 233

NIEM ASYM3 (Fortran, 2086). A general program to calculate atomic continuum processes using the NIEM method. R.J.W. Henry, S.P. Rountree, E.R. Smith. Subroutines required: AAJG (§2.4), AAJH (§2.4), ACWN0001 — AAJI 23 (1981) 233

SEPDE (Fortran, 1330). A non-iterative method for solving PDE's arising in electron scattering. E.C. Sullivan, A. Temkin — AANP 25 (1982) 97

RMATRX STG1R (Fortran, 6047). A general program to calculate atomic continuum processes incorporating model potentials and the Breit-Pauli Hamiltonian within the R-matrix method. N.S. Scott, K.T. Taylor. Subroutines required: AANS (§2.4), AANT (§2.4), AANU (§2.4), AANV (§2.4). Other versions: AAHA (§2.4), AAHF (§2.4) — AANR 25 (1982) 347

RMATRX STG2R (Fortran, 10141). A general program to calculate atomic continuum processes incorporating model potentials and the Breit-Pauli Hamiltonian within the R-matrix method. N.S. Scott, K.T. Taylor. Subroutines required: AANR (§2.4), AANT (§2.4), AANU (§2.4), AANV (§2.4). Other versions: AAHB (§2.4), AAHG (§2.4) — AANS 25 (1982) 347

RMATRX RECUP (Fortran, 6148). A general program to calculate atomic continuum processes incorporating model potentials and the Breit-Pauli Hamiltonian within the R-matrix method. N.S. Scott, K.T. Taylor. Subroutines required: AANR (§2.4), AANS (§2.4), AANU (§2.4), AANV (§2.4) — AANT 25 (1982) 347

RMATRX RECUD (Fortran, 1275). A general program to calculate atomic continuum processes incorporating model potentials and the Breit-Pauli Hamiltonian within the R-matrix method. N.S. Scott, K.T. Taylor. Subroutines required: AANR (§2.4), AANS (§2.4), AANT (§2.4), AANV (§2.4) — AANU 25 (1982) 347

RMATRX STG3R (Fortran, 9548). A general program to calculate atomic continuum processes incorporating model potentials and the Breit-Pauli Hamiltonian within the R-matrix method. N.S. Scott, K.T. Taylor. Subroutines required: AANR (§2.4), AANS (§2.4), AANT (§2.4), AANU (§2.4). Other versions: AAHC (§2.4), AAHH (§2.4) — AANV 25 (1982) 347

MOMTRANF (Fortran, 2590). A new program to calculate differential and total cross sections for electron-atom or ion scattering using the momentum transfer formalism. S.A. Salvini — AANW 27 (1982) 25

000A CORRECTION 26/09/88 (Fortran) — 52 (1988) 165

SCATTAMPREL (Fortran, 1247). Amplitudes for scattering of electrons by atomic systems including relativistic effects. K.P.W. Bartschat, N.S. Scott — ACFE 30 (1983) 369

OBSERVABLES (Fortran, 1429). Program to calculate observable quantities from scattering amplitudes for inelastic electron-atom collisions. K.P.W. Bartschat — ACFF 30 (1983) 383

Atomic physics — *Electron scattering (continued)*

CFASYM (Fortran, 3294). CFASYM: a program for the calculation of the asymptotic solutions of the coupled equations of electron collision theory. C.J. Noble, R.K. Nesbet. Subroutines required: ABNK (§4.7), ACCU (§4.5) ACCT 33 (1984) 399
SKEW (PL/1, 469). SKEW: program for calculation of electron scattering amplitudes on atomic potential using spin-orbit relativistic correction. E. Pilipczuk, I. Pilipczuk ACDU 36 (1985) 101
RECREM (Fortran, 3386). Recurrence relations for Coulomb excitation electric multipole radial matrix elements. L.D. Tolsma. Subroutine required: ACMM (§7.8) AALF 41 (1986) 41
RESFIT (Fortran, 1612). RESFIT: a multichannel resonance fitting program. K. Bartschat, P.G. Burke AAFX 41 (1986) 75
BETRT (Fortran, 1207). A procedure to evaluate the cross section for electron-hydrogen collisions in the Bethe approximation to the reactance matrix. A. Burgess, C.T. Whelan AAXK 47 (1987) 295
CEFEUSK (Fortran, 402). K-matrix calculation for general nonlocal potentials. J. Horacek, J. Bok ABRP 59 (1990) 319

2.5. Photon interactions

RAYLEIGH FORM FACTORS (Fortran, 310). Form factor program for Rayleigh scattering of gamma rays by bound electrons. F. Smend, M. Schumacher AAGY 7 (1974) 389
000A CORRECTION 25/09/75 (Fortran) 10 (1975) 257
Other versions: AAHF (§2.5), AANR (§2.5) AAHA 8 (1974) 149
Other versions: AAHG (§2.5), AANS (§2.5) AAHB 8 (1974) 150
Other versions: AAHH (§2.4), AANV (§2.5) AAHC 8 (1974) 150
A NEW VERSION OF RMATRX STG1 (Fortran, 5119). A new version of the general program to calculate atomic continuum processes using the R-matrix method. K.A. Berrington, P.G. Burke, M. Le Dourneuf, W.D. Robb, K.T. Taylor, Vo Ky Lan. Subroutines required: AAHG (§2.5), AAHH (§2.4). Other versions: AAHA (§2.5), AANR (§2.5) AAHF 14 (1978) 367
A NEW VERSION OF RMATRX STG2 (Fortran, 10154). A new version of the general program to calculate atomic continuum processes using the R-matrix method. K.A. Berrington, P.G. Burke, M. Le Dourneuf, W.D. Robb, K.T. Taylor, Vo Ky Lan. Subroutines required: AAHF (§2.5), AAHH (§2.4). Other versions: AAHB (§2.5), AANS (§2.5) AAHG 14 (1978) 367
RMATRX STG1R (Fortran, 6047). A general program to calculate atomic continuum processes incorporating model potentials and the Breit-Pauli Hamiltonian within the R-matrix method. N.S. Scott, K.T. Taylor. Subroutines required: AANS (§2.5), AANT (§2.5), AANU (§2.5), AANV (§2.5). Other versions: AAHA (§2.5), AAHF (§2.5) AANR 25 (1982) 347
RMATRX STG2R (Fortran, 10141). A general program to calculate atomic continuum processes incorporating model potentials and the Breit-Pauli Hamiltonian within the R-matrix method. N.S. Scott, K.T. Taylor. Subroutines required: AANR (§2.5), AANT (§2.5), AANU (§2.5), AANV (§2.5). Other versions: AAHB (§2.5), AAHG (§2.5) AANS 25 (1982) 347
RMATRX RECUP (Fortran, 6148). A general program to calculate atomic continuum processes incorporating model potentials and the Breit-Pauli Hamiltonian within the R-matrix method. N.S. Scott, K.T. Taylor. Subroutines required: AANR (§2.5), AANS (§2.5), AANU (§2.5), AANV (§2.5) AANT 25 (1982) 347
RMATRX RECUD (Fortran, 1275). A general program to calculate atomic continuum processes incorporating model potentials and the Breit-Pauli Hamiltonian within the R-matrix method. N.S. Scott, K.T. Taylor. Subroutines required: AANR (§2.5), AANS (§2.5), AANT (§2.5), AANV (§2.5) AANU 25 (1982) 347
RMATRX STG3R (Fortran, 9548). A general program to calculate atomic continuum processes incorporating model potentials and the Breit-Pauli Hamiltonian within the R-matrix method. N.S. Scott, K.T. Taylor. Subroutines required: AANR (§2.5), AANS (§2.5), AANT (§2.5), AANU (§2.5). Other versions: AAHC (§2.5), AAHH (§2.4) AANV 25 (1982) 347
RAYLEIGH DHFS RFF AND MRFF (Fortran, 328). Rayleigh self consistent relativistic form factors and modified form factors. D. Schaupp, M. Schumacher, F. Smend. Subroutine required: AAKB (§2.1) ACCN 32 (1984) 413
PHOTUC (Fortran, 9620). PHOTUC: oscillator strengths amd photoionization cross sections from close coupling wavefunctions. H.E. Saraph AAXB 46 (1987) 107
JELLYRPA (Fortran, 485). An RPA program for jellium spheres. G. Bertsch ABTC 60 (1990) 247
FRFRTR (Fortran, 496). Subroutines for the evaluation of cross sections of one-photon radiative processes occuring in fast-electron H-atom collisions. A. Dubois, A. Maquet ABTE 60 (1990) 271
BREMSS (Fortran, 493). Subroutines for the evaluation of cross sections of one-photon radiative processes occuring in fast-electron H-atom collsions. A. Dubois, A. Maquet ABTF 60 (1990) 271

Atomic physics *(continued)*

2.6. Other collision processes

SCATTERING BY COMPLEX POTENTIAL (Fortran, 625). The calculation of absorption and elastic cross sections using the optical potential. A.C. Allison — AACF 3 (1972) 173

SCAT (Fortran, 2566). A general program to study the scattering of particles by solving coupled inhomogeneous second-order differential equations. N. Chandra. Subroutine required: ACRK (§2.4) — AAGO 5 (1973) 417

Other version: AAJE (§2.6) — ACRL 5 (1973) 456

DCS2 (Fortran, 2661). New version of program for calculating differential and integral cross sections for quantum mechanical scattering problems from reactance or transition matrices. K. Onda, D.G. Truhlar, M.A. Brandt. Other versions: ACRL (§2.6), ACRL0001 — AAJE 21 (1980) 97

GAMOW FUNCTIONS (Fortran, 1359). GAMOW: a program for calculating the resonant state solution of the radial Schrodinger equation in an arbitrary optical potential. T. Vertse, K.F. Pal, Z. Balogh — AAOD 27 (1982) 309

2.7. Wave functions and integrals

TWO ELECTRON WAVEFUNCTIONS (Fortran, 1754). Computation of wavefunctions for the helium isoelectronic sequence. H.O. Knox — ACQK 1 (1970) 167

RKDP-RK INTEGRALS(DOUBLE PREC.) (Fortran, 1373). Hydrogenic Rk integrals. M.N. Lewis — AACB 1 (1970) 325

000A CORRECTION 24/06/70 (Fortran) — 1 (1970) 469

HYDROGENIC INTERACTION INTEGRAL (Fortran, 281). A program to calculate the radial parts of interaction matrix elements between two hydrogenic wave functions as power series. M.J. Jamieson — ABWA 1 (1970) 437

Other version: AAHE (§2.7) — ACQS 1 (1970) 457

MAPPAC (Fortran, 3600). A program for atomic wavefunction computations by the parametric potential method. M. Klapisch — AAKC 2 (1971) 239

NETI (Fortran, 1100). Program for evaluation of non-exchange type integrals required in electron-atom scattering theory using Slater-type orbitals as basis functions. R.L. Smith, D.G. Truhlar. Other version: AAGT (§2.7) — AAGP 5 (1973) 80

000A CORRECTION 19/07/74 (Fortran) — 8 (1974) 333

0001 NETI/ETI (Fortran, 1120). Continuum exchange integrals for algebraic variational calculations of electron-atom scattering using Slater-type orbitals as basis functions. J. Abdallah Jr., D.G. Truhlar — 9 (1975) 327

NETIX (Fortran, 1319). Program for evaluation of non-exchange type integrals required in electron-atom scattering theory using Slater-type orbitals as basis functions. R.L. Smith, D.G. Truhlar. Other version: AAGP (§2.7) — AAGT 5 (1973) 81

000A CORRECTION 19/07/74 (Fortran) — 8 (1974) 333

ATOMINT (Fortran, 458). Atomic integral containing three odd powers of interelectronic separation coordinates. A.H. Moussa, H.M.A. Radi — ACRO 6 (1973) 89

A NEW VERSION OF BASFUN (Fortran, 956). A general program to calculate atomic continuum processes using the R-matrix method. K.A. Berrington, P.G. Burke, J.J. Chang, A.T. Chivers, W.D. Robb, K.T. Taylor. Other version: ACQS (§2.7) — AAHE 8 (1974) 152

SPINORBITWEIGHTS (Fortran, 1565). A general program to calculate the matrix of the spin-orbit interaction. W.-D. Klotz. Subroutines required: ACQB (§4.1), ACQC (§4.1), AAGD (§4.1). Other version: ACXL (§2.7) — AAKL 9 (1975) 102

0001 WKAPPAKQ (Fortran, 357). Reduced matrix elements of summations of one-particle tensor products. W.-D. Klotz. Subroutines required: AAGD (§4.1), ACQB (§4.1), ACQC (§4.1) — 10 (1975) 56

000A CORRECTION 18/07/75 (Fortran) — 10 (1975) 70

SPINORBIT WEIGHTS 2 (Fortran, 1947). A new version of AAKL (the matrix elements of spin-orbit interaction) adapted to spectroscopic notation. K.M.S. Saxena. Subroutines required: ACQB (§4.1), ACRN (§4.1), AAHD (§4.1). Other version: AAKL (§2.7) — ACXL 13 (1977) 193

SLATER INTEGRALS (PL/1, 197). Exact Slater integrals. L.B. Golden — ACYB 14 (1978) 255

STP (Fortran, 673). An integral package for one-centre integrals over Slater-Transform-Preuss functions. E. Yurtsever — ACYU 16 (1978) 65

CLMINT (Fortran, 1544). Radial electric multipole matrix elements for inelastic collisions in atomic and nuclear physics. H.F. Arnoldus — ACCM 32 (1984) 421

GREEN (Pascal, 1655). Integrals involved in the perturbation theory of a hydrogen-like system. I. J. Mlodzki, A. Lusakowski, M. Suffczynski — ACDH 34 (1984) 199

GREEN2 (Pascal, 873). Integrals involved in the perturbation theory of a hydrogen-like system. II. J. Mlodzki — ACDI 34 (1984) 211

Atomic physics — *Wave functions and integrals (continued)*

R12 INTERACTION MATRIX ELEMENTS (Reduce, 595). A Reduce package for exact Coulomb interaction matrix elements. N. Bogdanova, H. Hogreve — ABBN 48 (1988) 319

2.8. Exotic atoms

MUONIC ATOM CASCADE (Fortran, 2760). Muonic atom cascade program. V.R. Akylas, P. Vogel — AAMA 15 (1978) 291
MUON (Fortran, 2385). Static and dynamic muonic-atom codes MUON and RURP. G.A. Rinker — ABNB 16 (1979) 221
RURP (Fortran, 4564). Static and dynamic muonic-atom codes MUON and RURP. G.A. Rinker. Subroutine required (for data): ABNB (§2.8) — ABNC 16 (1979) 221

2.9. Theoretical methods (see also angular momentum, §4.1)

Other versions: ACQV (§2.9), AAOM (§2.9) — ACQL 1 (1970) 359
Other versions: ACQL (§2.9), AAOM (§2.9) — ACQV 2 (1971) 180
Other version: ACWE (§2.9) — ACRJ 5 (1973) 263
MCP75 (Fortran, 2465). A program to calculate angular momentum coefficients in relativistic atomic structure – revised version. I.P. Grant. Subroutines required: AAHD (§4.1), ACRI (§4.1). Other version: ACRJ (§2.9) — ACWE 11 (1976) 397
000A CORRECTION 29/09/77 (Fortran) — 14 (1978) 311
MCBP-BREIT ANGULAR COEFFICIENTS (Fortran, 1974). MCBP: a program to calculate angular coefficients of the Breit interaction between electrons in the low energy limit. N. Beatham, I.P. Grant, B.J. McKenzie, N.C. Pyper. Subroutines required: AAHD (§4.1), ACRI (§4.1), ACWE (§2.9) — AAAL 18 (1979) 245
WEIGHTS A MORE EFFICIENT VERSION (Fortran, 3150). A more efficient version of the WEIGHTS and NJSYM packages. N.S. Scott, A. Hibbert. Subroutines required: ACQB (§4.1), ACRN (§4.1), AAON (§4.1). Other versions: ACQL (§2.9), ACQV (§2.9) — AAOM 28 (1982) 189
SU2DIMPH (Fortran, 1013). Model space dimensionalities for multiparticle fermion systems. J.P. Draayer, H.T. Valdes — AABN 36 (1985) 313

3. Biology

AMYR (Fortran, 2198). Molecular associations. S. Fraga — ACEO 29 (1983) 351
0001 AGAB (Fortran, 198). Association of proteins: adaptation and coupling of two available programs. L. Seijo, B. Coghlan, S. Fraga — 41 (1986) 169
DIAD (Fortran, 820). Determination of antigenic determinants. S. Fraga — ACFH 30 (1983) 325
POETA (Fortran, 7746). Determination of proteinic structures: an experimentation program. B. Coghlan, S. Fraga — AABU 36 (1985) 391
0001 AGAB (Fortran, 234). Association of proteins: adaptation and coupling of two available programs. L. Seijo, B. Coghlan, S. Fraga — 41 (1986) 169

4. Computational methods

4.1. Angular momentum coupling coefficients

P SHELL C.F.P. (Fortran, 173). Fractional parentage coefficients for equivalent p shell and equivalent d shell electrons. D.C.S. Allison — ACQB 1 (1969) 15
Other version: ACRN (§4.1) — ACQC 1 (1969) 16
VECTOR COUPLING COEFFICIENTS (Fortran, 1634). Vector coupling coefficients for complex atoms. H. Nussbaumer — ACQH 1 (1970) 191
3N-J SYMBOLS FOR SU(2) (Fortran, 969). Arbitrary 3n-j symbols for SU(2). J. Shapiro — AAYA 1 (1970) 207
Other versions: AAHD (§4.1), AAON (§4.1), ABBY (§4.1) — AAGD 1 (1969) 241
GEOMETRICAL COEFFICIENT (Fortran, 342). Angular momentum coupling coefficients. T. Tamura — ABMA 1 (1970) 337
000A CORRECTION 19/01/71 (Fortran) — 2 (1971) 174
DS (Fortran, 114). The reduced rotation matrix. W.J. Braithwaite, J.G. Cramer — ABOR 3 (1972) 318
COEF (Fortran, 633). Vector coupling coefficients as products of prime factors. R.McD. Dodds, G. Wiechers — ACRE 4 (1972) 268
CFPJJ – CFP IN JJ-COUPLING (Fortran, 448). CFPJJ-fractional parentage coefficients for equivalent electrons in jj-coupling. I.P. Grant — ACRI 4 (1972) 377
000A CORRECTION 08/05/77 (Fortran) — 14 (1978) 311

Computational methods — *Angular momentum coupling coefficients (continued)*

A NEW D SHELL CFP (Fortran, 412). A new version of the program to compute the fractional parentage coefficients for equivalent d shell electrons. A.T. Chivers. Other version: ACQC (§4.1) — ACRN 6 (1973) 88

REDUCED TENSOR MATRIX ELEMENTS (Fortran, 1094). A program to evaluate the reduced matrix elements of summations of one-particle tensor operators. W.D. Robb. Subroutines required: ACQB (§4.1), ACRN (§4.1), AAHD (§4.1). Other version: AAKP (§4.1) — AAKF 6 (1973) 132

000A CORRECTION 14/11/74 (Fortran) — 9 (1975) 268

0001 ADAPT TENSOR FOR PRODUCTS (Fortran, 55). Adaptation of CIV3 to evaluate hyperfine structure. R. Glass, A. Hibbert. Subroutines required: ACQB (§4.1), ACRN (§4.1), AAHD (§4.1). Other version: AAKP0001 — 11 (1976) 125

000B CORRECTION 12/04/77 (Fortran) — 13 (1977) 231

Other version: ACYM (§4.1) — AAAD 7 (1974) 225

A NEW VERSION OF NJSYM (Fortran, 1580). A general program to calculate atomic continuum processes using the R-matrix method. K.A. Berrington, P.G. Burke, J.J. Chang, A.T. Chivers, W.D. Robb, K.T. Taylor. Other versions: AAGD (§4.1), AAON (§4.1), ABBY (§4.1) — AAHD 8 (1974) 151

F SHELL C.F.P. (Fortran, 1825). Fractional parentage coefficients for equivalent f shell electrons. D.C.S. Allison, J.E. McNulty — ACRY 8 (1974) 246

REDUCED TENSOR MATRIX ELEMENTS 2 (Fortran, 1544). A new version of AAKF (Reduced Tensor Matrix Elements) adapted to spectroscopic notation. C.F. Fischer, K.M.S. Saxena. Subroutines required: ACQB (§4.1), ACRN (§4.1), AAHD (§4.1). Other version: AAKF (§4.1) — AAKP 9 (1975) 370

000A CORRECTION 12/04/77 (Fortran) — 13 (1977) 231

0001 ADAPT TENSOR 2 FOR PRODUCT (Fortran, 89). Adaptation of the new version of the reduced tensor matrix elements (AAKP) program: inclusion of the evaluation of matrix elements of tensor products. K.M.S. Saxena. Subroutines required: ACQB (§4.1), ACRN (§4.1), AAHD (§4.1). Other version: AAKF0001 — 13 (1977) 289

0002 ADAPT TENSOR 2 TO CHECK DATA (Fortran, 291). Adaptation of the new version of the reduced matrix elements (AAKP) program; inclusion of the checking of the input data. K.M.S. Saxena. Subroutines required: ACQB (§4.1), ACRN (§4.1), AAHD (§4.1) — 16 (1978) 57

CLEBSCH-GORDAN EXPLICIT FORMULAS (Formac, 185). Explicit formulas for Clebsch-Gordan coefficients. G. Rudnicki-Bujnowski — ACWL 10 (1975) 245

J1-RECURSION OF 3J-COEFFICIENTS (Fortran, 411). Recursive evaluation of 3j- and 6j- coefficients. K. Schulten, R.G. Gordon — ACWQ 11 (1976) 269

M2-RECURSION OF 3J-COEFFICIENTS (Fortran, 401). Recursive evaluation of 3j- and 6j- coefficients. K. Schulten, R.G. Gordon — ACWR 11 (1976) 269

J1-RECURSION OF 6J-COEFFICIENTS (Fortran, 436). Recursive evaluation of 3j- and 6j- coefficients. K. Schulten, R.G. Gordon — ACWS 11 (1976) 269

ANGMOM (Fortran, 904). New Fortran programs for angular momentum coefficients. K. Srinivasa Rao, K. Venkatesh — ACYK 15 (1978) 227

ONE-PARTICLE OPS IN JJ-COUPLING (Fortran, 1336). A new program for calculating matrix elements of one-particle operators in jj-coupling. N.C. Pyper, I.P. Grant, N. Beatham. Subroutines required: AAHD (§4.1), ACRI (§4.1), ACWE (§2.9). Other version: AAAD (§4.1) — ACYM 15 (1978) 387

CONTRACTION-BASIC-DIAGRAM (Fortran, 1326). A program to generate closed basic diagrams for product operators. B.D. Chang, S.S.M. Wong — ACZI 18 (1979) 35

CONTRACTION-JT-RECOUPLING (Fortran, 3491). A program to evaluate closed diagrams algebraically for angular momentum coupled product operators. B.D. Chang, S.S.M. Wong. Subroutine required (for data): ACZI (§4.1) — AAAM 20 (1980) 191

ROOT (Fortran, 2154). Root-rational-fraction package for exact calculation of vector-coupling coefficients. A.J. Stone, C.P. Wood — ABVN 21 (1980) 195

CONTRACTION-COMPILER (Fortran, 5372). A system to generate Fortran programs for calculating configuration traces of angular momentum coupled product operators. B.D. Chang, J.P. Draayer, S.S.M. Wong. Subroutines required (for data): ACZI (§4.1), AAAM (§4.1) — AAOP 28 (1982) 41

NJSYM – A MORE EFFICIENT VERSION (Fortran, 1561). A more efficient version of the WEIGHTS and NJSYM packages. N.S. Scott, A. Hibbert. Other versions: AAGD (§4.1), AAHD (§4.1), ABBY (§4.1) — AAON 28 (1982) 189

CLEBSCH-GORDAN STORAGE (1, 2578). Upling coefficients cdc 750 centre for computing ser. C.F. Vermaak, D. Vermaak, H.G. Miller. Subroutine required: 337 — ACFN 31 (1984) 41

Computational methods — *Angular momentum coupling coefficients (continued)*

000A CORRECTION 06/02/85 (Fortran) 36 (1985) 337

TRANSFORM (Fortran, 5293). TRANSFORM: a program to calculate transformations between various jj and LS coupling schemes. K.G. Dyall AADT 39 (1986) 141

PRACAH (OCCAM, 435). The parallel computation of Racah coefficients using transputers. N.S. Scott, P. Milligan, H.W.C. Riley AAXE 46 (1987) 83

NJGRAF (Fortran, 5212). NJGRAF: an efficient program for calculation of general recoupling coefficients by graphical analysis, compatible with NJSYM. A. Bar-Shalom, M. Klapisch. Other versions: AAGD (§4.1), AAHD (§4.1), AAON (§4.1) ABBY 50 (1988) 375

ROTAR (Fortran, 682). Rotation of real spherical harmonics. J.R. Alvarez Collado, J. Fernandez Rico, R. Lopez, M. Paniagua, G. Ramirez ABHI 52 (1989) 323

IR, CGC (Fortran, 4846). Computer generated subgroup-symmetry adapted irreducible representations and CG coefficients of space groups by the eigenfunction method. Jia-Lun Ping, Qing-Rong Zheng, Bing-Qing Chen, Jin-Quan Chen ABHE 52 (1989) 355

NINEJ (Fortran, 1700). A new Fortran program for the 9-j angular momentum coefficient. K. Srinivasa Rao, V. Rajeswari, C.B. Chiu ABLE 56 (1989) 231

AMTREES (Pascal, 4587). Recursive generation of Cartesian angular momentum coupling trees for SO(3). B.S. Sherborne, G.E. Stedman ABRD 59 (1990) 417

4.2. Other algebras and groups

PERMID (Fortran, 226). An algorithm generating permutations with identical objects. P. Basso, C. Bourrely ACQP 1 (1970) 415

WEYL GROUP (Fortran, 607). Computer generated Weyl groups. R.E. Beck, B. Kolman ACRA 3 (1972) 155

SU(3)VCC (Fortran, 817). Analytic formulation of SU(3) vector coupling coefficients for n particles. J.M. Casilio, M.E. Noz AAWA 5 (1973) 365

SU3 WIGNER & RACAH COEFFICIENTS (Fortran, 2046). A user's guide to Fortran programs for Wigner and Racah coefficients of SU3. Y. Akiyama, J.P. Draayer ACRM 5 (1973) 405

FREUD (Fortran, 1024). Freudenthal's inner multiplicity formula. B. Kolman, R.E. Beck AAAA 6 (1973) 24

RACOUT (Fortran, 670). Racah's outer multiplicity formula. R.E. Beck, B. Kolman. Subroutine required: AAAA (§4.2) AAAG 8 (1974) 95

EIGLAB (Fortran, 1168). Eigenstates and eigenvalues of labelling operators for O(3) bases of U(3) representations. W. McKay, J. Patera, R.T. Sharp ABID 10 (1975) 1

IMUG (Basic, 353). Inner multiplicity of unitary groups. S. Thomas, M.T. Sunny. Other version: AATL (§4.2) AAAJ 14 (1978) 267

DAM AND DEGSUN (Fortran, 361). Weight multiplicity for unitary groups. V. Amar, U. Dozzio, C. Oleari AAAK 14 (1978) 413

SYMCGM (Fortran, 1876). Generation of the Clebsch-Gordan coefficients for Sn. S. Schindler, R. Mirman. Subroutine required (for data): ACXW (§4.2) ACXV 15 (1978) 131

SYMOR (Fortran, 187). Generation of the Clebsch-Gordan coefficients for Sn. S. Schindler, R. Mirman. Subroutines required (for data): ACXV (§4.2), ACXW (§4.2) ACYH 15 (1978) 131

SYMCC (Fortran, 268). Generation of the Clebsch-Gordan coefficients for Sn. S. Schindler, R. Mirman. Subroutines required (for data): ACXV (§4.2), ACXW (§4.2) ACYI 15 (1978) 131

SYMFUNC (Fortran, 805). Functions on tableaux and frames of the symmetric group. S. Schindler, R. Mirman ACXW 15 (1978) 147

SYMGRPTB (PL/1, 746). Computation of group tables for the symmetric groups. M.F. Soto Jr., R. Mirman. Subroutine required: AAME (§4.2) AAMC 23 (1981) 81

NGHBTRNS (PL/1, 132). Computation of group tables for the symmetric groups. M.F. Soto Jr., R. Mirman. Subroutines required: AAMC (§4.2), AAME (§4.2) AAMD 23 (1981) 81

SYMSTATS (PL/1, 769). Construction of symmetric group representation matrices and states. M.F. Soto Jr., R. Mirman. Subroutine required: AAMC (§4.2) AAME 23 (1981) 95

SYMRPMAT (PL/1, 171). Construction of symmetric group representation matrices and states. M.F. Soto Jr., R. Mirman. Subroutines required: AAMC (§4.2), AAME (§4.2) AAMF 23 (1981) 95

ORTHNRM (PL/1, 200). Construction of symmetric group representation matrices and states. M.F. Soto Jr., R. Mirman. Subroutine required: AAME (§4.2) AAMG 23 (1981) 95

MATTAB (PL/1, 214). Construction of symmetric group representation matrices and states. M.F. Soto Jr., R. Mirman. Subroutines required: AAMC (§4.2), AAME (§4.2) AAMH 23 (1981) 95

SYMBNDS (PL/1, 182). Number of representations and maximum dimensions for S(N). M.F. Soto Jr., R. Mirman AAMI 27 (1982) 57

Computational methods — *Other algebras and groups (continued)*

LIE0, LIE1, LIE2, LIE3, LIE4 (LISP, 246). A REDUCE package for determining Lie symmetries of ordinary and partial differential equations. F. Schwarz — AAZB 27 (1982) 179
SCHUR (Pascal, 493). Computation of outer products of Schur functions. O. Egecioglu — AAMJ 28 (1982) 183
CASEIG (Fortran, 249). Computation of Casimir operator eigenvalues. A.K. Bose — AARX 28 (1983) 271
BCD DAM AND MAIN (Fortran, 809). Weight multiplicity for Cartan classes. V. Amar, U. Dozzio, C. Oleari — ACED 29 (1983) 201
DIRECTOR (Fortran, 2114). DIRECTOR: a program for calculating representation matrices of the symmetric group in the Yamanouchi Kotani basis or in a direct product basis. J.C. Manley, J. Gerratt — ACFP 31 (1984) 75
CHAR (Pascal, 68). Murnaghan's rule and the irreducible characters of the symmetric group. O. Egecioglu, G.M. Costa — AAMK 31 (1984) 357
GENBIN, PATERN (IBM Assembler, Fortran, 1449). Generation and inter-correlation of basis sets in implementing the unitary group approach to U(n) x SU(m). R.D. Kent, M. Schlesinger — ACCR 33 (1984) 367
ROTTRA (Fortran, 987). ROTTRA: a program for generating rotations and translations. O.E. Taurian — ACCZ 34 (1984) 153
KOSNUM (PL/1, 1456). Number of states of unitary group representations. M.F. Soto Jr, R. Mirman. Subroutine required: AAMI (§4.2) — ACDT 34 (1985) 339
UGRPSTTS (PL/1, 1090). Construction of canonical states of unitary groups. M.F. Soto Jr, R. Mirman. Subroutines required: AAMC (§4.2), AAME (§4.2), AAMI (§4.2), ACDT (§4.2) — AABB 34 (1985) 347
UGREPMAT (PL/1, 772). Computation of unitary group representation matrices. M.F. Soto Jr, R. Mirman. Subroutines required: AAMC (§4.2), AAME (§4.2), AAMI (§4.2), ACDT (§4.2), AABB (§4.2) — AABA 34 (1985) 357
INVRNUGR (PL/1, 381). Invariants and commutators for unitary group representations. M.F. Soto Jr, R. Mirman. Subroutines required: AAME (§4.2), AAMI (§4.2), ACDT (§4.2), AABA (§4.2) — AABC 34 (1985) 365
COMMUMAT (PL/1, 194). Invariants and commutators for unitary group representations. M.F. Soto Jr, R. Mirman. Subroutines required: AAME (§4.2), AAMI (§4.2), ACDT (§4.2), AABA (§4.2) — AABD 34 (1985) 365
ORTHNRM (PL/1, 302). Invariants and commutators for unitary group representations. M.F. Soto Jr, R. Mirman. Subroutines required: AAME (§4.2), AAMI (§4.2), ACDT (§4.2), AABA (§4.2) — AABE 34 (1985) 365
GAN (Fortran, 412). Program to calculate generalized Talmi-Moshinsky coefficients of 3-body and 4-body systems. See erratum Comput. Phys. Commun. 39 (1986) 154. Gan You-ping, Gong Min-zhuan, Wu Chong-en, Bao Cheng-guang — ACDO 34 (1985) 387
Other version: AAFG (§4.2) — AABI 36 (1985) 213
LIE (Reduce, 132). A REDUCE program for determining point and contact lie symmetries of differential equations. V.P. Eliseev, R.N. Fedorova, V.V. Kornyak — AABS 36 (1985) 383
BAO (Fortran, 294). Program to calculate transformation brackets of hyperspherical harmonic functions of a three body system. See erratum Comput. Phys. Commun. 47 (1987) 367. Bao Cheng-guang, Gan You-ping, Lui Xian-hui — AABV 36 (1985) 401
ROTATION MATRIX ELEMENTS DD (Fortran, 4717). A Fortran 77 version of 'a function subprogram in order to calculate the matrix elements of rotation operators'. F. Brut. Other version: AABI (§4.2) — AAFG 39 (1986) 297
RADICAL (Pascal, 5341). PASCAL programs for identification of Lie algebras. Part 1. RADICAL: a program to calculate the radical and nil radical of parameter-free and parameter-dependent Lie algebras. D.W. Rand — AALB 41 (1986) 105
000A CORRECTION 02/06/87 (Pascal) — 47 (1987) 369
GENDRT, DRTDIM (Pascal, 5227). Data structure techniques for the graphical special unitary group approach to arbitrary spin representations. R.D. Kent, M. Schlesinger — AATF 43 (1987) 413
CLTB (Fortran, 151). Clifford multiplication tables. G. Bergdolt — AATX 44 (1987) 137
POLRANGE (Fortran, 285). Two programs to perform certain symbolic calculations in the enveloping algebra of a Lie algebra. H. De Meyer, G. Vanden Berghe, P. De Wilde — AATO 44 (1987) 197
ORDINVAR (Fortran, 688). Two programs to perform certain symbolic calculations in the enveloping algebra of a Lie algebra. H. De Meyer, G. Vanden Berghe, P. De Wilde — AATP 44 (1987) 197
IMUG1 (Fortran, 602). Inner multiplicity of unitary groups – a modified version. S. Thomas. Other version: AAAJ (§4.2) — AATL 44 (1987) 221
SPLIT (Pascal, 4169). PASCAL programs for identification of lie algebras, part II: SPLIT, a program to decompose parameter-free and parameter-dependent lie algebras into direct sums. D.W. Rand, P. Winternitz, H. Zassenhaus. Subroutine required: AALB (§4.2) — AAXM 46 (1987) 297
LEVI (Pascal, 1163). PASCAL programs for identification of lie algebras, part III: Levi decomposition and canonical basis. D.W. Rand. Subroutines required: AALB (§4.2), AAXM (§4.2) — AAXN 46 (1987) 311

Computational methods — *Other algebras and groups (continued)*

CANONIK (Pascal, 1082). PASCAL programs for identification of lie algebras, part III: Levi decomposition and canonical basis. D.W. Rand. Subroutines required: AALB (§4.2), AAXM (§4.2) AAXO 46 (1987) 311
HS4 (Fortran, 882). Calculation of transformation brackets of hyperspherical harmonics of four-body systems with arbitrary masses. W. Wang, Y. Gan, C.G. Bao ABDC 50 (1988) 331
VSPLAD (COMMON LISP, 1700). Symbolic lie algebras manipulations using COMMON LISP. R. Cecchini, M. Tarlini ABFW 52 (1989) 283
UNTOU3 (Fortran, 1829). Representations of U(3) in U(N). J.P. Draayer, Y. Leschber, S.C. Park, R. Lopez ABLJ 56 (1989) 279

4.3. Differential equations

BOUND (Fortran, 372). Nuclear bound state wave function subroutine. W.R. Smith ACQA 1 (1969) 55
DEUT (Fortran, 968). Bound state solution of the two-nucleon Schroedinger equation with tensor forces. L. Lovitch, S. Rosati ABGE 2 (1971) 353
0001 REMOVE NON-STANDARD FORTRAN (Fortran, 138). Bound state solution of the two-nucleon Schroedinger equation with tensor forces. L. Lovitch, S. Rosati 4 (1972) 140
SCHROD (Fortran, 138). Numerical solution of the radial Schrodinger equation. F. Beleznay ACQZ 3 (1972) 334
YUKAWA/RH**LP D JL 72 (Fortran, 433). Nearly exact calculation of the solution of the radial Schrodinger equation. L. Marquez AAGN 5 (1973) 379
SCAT (Fortran, 2566). A general program to study the scattering of particles by solving coupled inhomogeneous second-order differential equations. N. Chandra. Subroutine required: ACRK (§2.4) AAGO 5 (1973) 417
BSSW (Fortran, 300). Computation of S-state binding energy and wave functions in a Saxon-Woods potential. J. Cugnon ABGL 6 (1973) 17
DIRPAK (Fortran, 2563). A program package for the Dirichlet problem with axially symmetric boundary conditions. J.B. Campbell ABSB 9 (1975) 283
NUCLEAR POTENTIAL (Fortran, 1357). Solution of bound state problems in nuclear shell model with momentum dependent potentials. M.A.K. Lodhi, B.T. Waak ACWK 10 (1975) 182
MUCALC (Fortran, 1126). Determination of SSOR-SI iteration parameters. J.B. Campbell ABUM 10 (1975) 194
GRN1 (Fortran, 1218). A program to calculate Green's functions. S.P. Rountree, T. Burnett, R.J.W. Henry, C.A. Weatherford ACWN 11 (1976) 27
0001 GRN2 (Fortran, 2220). Adaptation of a program to calculate Green's function. R.J.W. Henry, S.P. Rountree, E.R. Smith 23 (1981) 233
FORSIM VI (Fortran, 6991, Manual 162 pages). FORSIM VI: a program package for the automated solution of arbitrarily defined differential equations. M.B. Carver ACYZ 17 (1979) 283
RADISH (Fortran, 602). De Vogelaere's method with automatic error control. J.P. Coleman, J. Mohamed ACZB 17 (1979) 283
SCHRODINTEQN (Fortran, 374). An integral equation program to calculate radial wave functions and scattering phase shifts of short-range local interactions. M.S. Stern AAIE 17 (1979) 365
SIPSOL (Fortran, 1022). SIPSOL: a suite of subprograms for the solution of the linear equations arising from elliptic partial differential equations. C.R. Jesshope ACZL 17 (1979) 383
EXPFIT1 (Fortran, 766). The method of Raptis and Allison with automatic error control. J. Mohamed AANA 20 (1980) 309
PCNUM (Fortran, 829). A program for the predictor-corrector Numerov method. W.E. Baylis, S.J. Peel AARJ 25 (1982) 21
Other version: AAJL (§4.3) AAJK 27 (1982) 299
GAMOW FUNCTIONS (Fortran, 1359). GAMOW: a program for calculating the resonant state solution of the radial Schrodinger equation in an arbitrary optical potential. T. Vertse, K.F. Pal, Z. Balogh AAOD 27 (1982) 309
VPM (Fortran, 3734). VPM: a new asymptotic package. J.P. Croskery, N.S. Scott, K.L. Bell, K.A. Berrington AAOE 27 (1982) 385
RPROP2 (Fortran, 3039). A generalized R-matrix propagation program for solving coupled second-order differential equations. L.A. Morgan AAJL 31 (1984) 419
DIFEQ (Fortran, 406). A program for performing a numerical integration of the Schroedinger equation. C. Foglia ACCC 32 (1984) 209
MRVAC (Fortran, 2760). MRVAC: a variational correction method for solving differential equations with r**-n coupling. M.R.H. Rudge ACCV 34 (1984) 187
GREFUL (Fortran, 1813). A Green's function code for Schrodinger equations with nonlocal separable kernels. H. Leeb, H. Markum ABPP 34 (1985) 271
SCR2 (Fortran, 265). Solving the Schrodinger equation for bound states. P. Falkensteiner, H. Grosse, F. Schoberl, P. Hertel ACDQ 34 (1985) 287

Computational methods — *Differential equations (continued)*

POT4A (Fortran, 4808). POT4A: a program for the direct solution of Poisson's equation in complex geometries. S.J. Beard, R.W. Hockney. Subroutines required: ABUF (§4.14) or ABUJ (§4.14) or ABUK (§4.14), ABUA (§4.6) ACDB 36 (1985) 25
LIE (Reduce, 132). A REDUCE program for determining point and contact lie symmetries of differential equations. V.P. Eliseev, R.N. Fedorova, V.V. Kornyak AABS 36 (1985) 383
DRANK, CONSD, CONSD2 (Reduce, Rlisp, 581). A REDUCE program for finding conserved densities of partial differential equations with uniform rank. M. Ito, F. Kako AADG 38 (1985) 415
LB (PL/1, 762). Determination of Lie-Backlund symmetries of differential equations using FORMAC. R.N. Fedorova, V.V. Kornyak AADL 39 (1985) 93
SCHROD (Fortran, 438). A program for the calculation of energy eigenvalues and eigenstates of a Schrodinger equation. V. Fack, G. Vanden Berghe AADV 39 (1986) 187
DISSYS (RLISP, 931). A REDUCE package for determining first integrals of autonomous systems of ordinary differential equations. F. Schwarz AAFF 39 (1986) 285
DRANK, DRANK2, SYM, SYM2, SYMS (Reduce, Rlisp, 913). A REDUCE program for finding symmetries of nonlinear evolution equations with uniform rank. M. Ito AALS 42 (1986) 351
ODEPAINLEVE (REX MACSYMA, 305). ODEPAINLEVE: a MACSYMA package for Painleve analysis of ordinary differential equations. D.W. Rand, P. Winternitz AALT 42 (1986) 359
TPR (Reduce, 131). Tests of resonances in the Painleve analysis. L. Hlavaty AATA 42 (1986) 427
RKPC (Fortran, 617). Subroutines for integration of systems of first order ODE's. G. Delic, S.M. Malherbe ABBH 48 (1988) 293
VCSUM (Fortran, 430). Program to calculate the spectral harmonic expansion coefficients of the two scalar fields product. Z. Martinec. Subroutine required: AAPE (§4.11) ABHK 54 (1989) 177
PHASE1 (Fortran, 2422). A Fortran program for the numerical integration of the one dimensional Schrodinger equation using exponential and Bessel fitting methods. J.R. Cash, A.D. Raptis, T.E. Simos ABLM 56 (1990) 391

4.4. Feynman diagrams

P.T. DIAGRAM GENERATION (Fortran, 879). Computer generation of Feynman diagrams for perturbation theory. II. Program description. H.C. Wong, J. Paldus AAKH 6 (1973) 9
GRAFFITI (Fortran, 638). Computer generation of connected graphs. D.C. Rapaport ACOA 8 (1974) 320
GRAND (Pascal, Fortran, 6664). Automatic generation of Feynman graphs and amplitudes in QED. T. Kaneko, S. Kawabata, Y. Shimizu AATD 43 (1987) 279
COLOR (Reduce, 469). Program COLOR for computing the group-theoretic weight of Feynman diagrams in non-Abelian gauge theories. A.P. Kryukov, A.Ya. Rodionov AAXC 48 (1988) 327
LERG-I (Reduce, 1251). Algebraic reduction of one-loop Feynman diagrams to scalar integrals. R.G. Stuart. Other version: ABLU (§4.4) ABBX 48 (1989) 367
LOOPS (Reduce, 663). LOOPS: procedures for multiloop calculations in quantum field theory for system REDUCE. L.R. Surguladze, F.V. Tkachov ABJO 55 (1989) 205
MINCER (SCHOONSCHIP, 3707). MINCER: multiloop calculations in quantum field theory for system SCHOONSCHIP. S.G. Gorishny, S.A. Larin, L.R. Surguladze, F.V. Tkachov ABJQ 55 (1989) 381
LERG-I (Reduce, 2595). Algebraic reduction of one-loop Feynman diagrams to scalar integrals II. R.G. Stuart, A. Gongora-T. Other version: ABBX (§4.4) ABLU 56 (1990) 337
CHANEL (Fortran, 1395). Numerical calculation of helicity amplitudes for processes involving massive fermions. H. Tanaka ABLT 58 (1990) 153
FEYNMAN (LATEX, 1922, Manual 92 pages). A LaTeX graphics routine for drawing Feynman diagrams. M.J.S. Levine ABLR 58 (1990) 181

4.5. Coulomb functions

COULOM (Fortran, 547). Coulomb functions for complex energies. T. Tamura, F. Rybicki ABOC 1 (1969) 25
000A CORRECTION 18/03/72 (Fortran) 3 (1972) 276
COULOM FOR REAL ENERGY (Fortran, 1073). Coulomb functions in entire (eta,rho)-plane. C. Bardin, Y. Dandeu, L. Gauthier, J. Guillermin, T. Lena, J.M. Pernet, H.H. Wolter, T. Tamura ABOQ 3 (1972) 73
RCWFN (Fortran, 282). Coulomb wave functions for all real eta and rho. A.R. Barnett, D.H. Feng, J.W. Steed, L.J.B. Goldfarb ABPC 8 (1974) 377
0001 RCWFF (Fortran, 74). RCWFF – a modification of the real Coulomb wavefunction program RCWFN. A.R. Barnett 11 (1976) 141
A00A CORRECTION TO 0001 26/10/77 (Fortran). Unpublished correction

Computational methods — *Coulomb functions (continued)*

CCOULM (Fortran, 400). Coulomb functions with complex angular momenta. T. Takemasa, T. Tamura, H.H. Wolter ABND 17 (1979) 351
COUL (Fortran, 707). Coulomb functions (negative energies). K.L. Bell, N.S. Scott AANB 20 (1980) 447
KLEIN: COULOMB WFN, REAL L,ETA,X (Fortran, 312). KLEIN: Coulomb functions for real lambda and positive energy to high accuracy. A.R. Barnett ABNJ 24 (1981) 141
COULAN (Fortran, 337). Coulomb functions analytic in the energy. M.J. Seaton AAJJ 25 (1982) 87
RCGF (Pascal, 1387). A Pascal program for calculating the reduced Coulomb Green's functions and their partial waves. J. Mlodzki, J. Kuszkowski, M. Suffczynski ACEP 29 (1983) 341
COULN (Fortran, 449). COULN: a program for evaluating negative energy Coulomb functions. C.J. Noble, I.J. Thompson ACCU 33 (1984) 413
COULCC (Fortran, 1597). COULCC: a continued-fraction algorithm for Coulomb functions of complex order with complex arguments. I.J. Thompson, A.R. Barnett ACDP 36 (1985) 363

4.6. Fourier transforms

FOUR67 (Fortran, 1122). FOUR67, a fast Fourier transform package. J.P. Christiansen, R.W. Hockney ABUA 2 (1971) 127
FOURGEN (PL/1, Fortran, 601). FOURGEN: a fast Fourier transform program generator. J.A. Maruhn ABUO 12 (1976) 147
TRIINT (Fortran, 951). Fourier analysis with splines. A Fortran program. C. Pomponiu, M. Sararu AAUX 16 (1978) 93
FTRANS (Fortran, 396). On numerical Bessel transformation. B. Sommer, J.G. Zabolitzky ACZC 16 (1979) 383
FASTF (Fortran, 376). FASTF: fast Fourier transform with arbitrary factors. E. Garcia-Torano ACUH 30 (1983) 397
MFFT (Fortran, 4462). MFFT: a package for two- and three-dimensional vectorized discrete Fourier transforms. A. Nobile, V. Roberto AALL 42 (1986) 233
0001 MFFT4 (Fortran, 1323). MFFT4: four dimensional vectorized fast Fourier transforms. A. Nobile, V. Roberto, F. Saitta 48 (1988) 313
UNIDFT (Fortran, 4710). UNIDFT: a package of optimized discrete Fourier transforms. G. Cabras, V. Roberto, G. Salemi AAXR 47 (1987) 113
CCFS (Fortran, 682). Subroutines for convolution sums of Chebyshev and Fourier series. G. Delic, S.M. Malherbe ABBO 48 (1988) 305
SW2DFFT (Fortran, 655). Two dimensional fast Fourier transform for large data matrices. M.H. Serzu, W.M. Moon ABFB 52 (1989) 333

4.7. Other functions

CLOGAM AND CDIGAM (Fortran, 175). Programs for computing the logarithm of the gamma function and the digamma function for complex argument. K.S. Kolbig ACRG 4 (1972) 221
LEGENDRE (Fortran, 160). Associated Legendre polynomials, ordinary and modified spherical harmonics. W.J. Braithwaite ABME 5 (1973) 390
FORTRAN CALCULATION OF SODS (Fortran, 343). A subroutine and procedure for the rapid calculation of simple off-diagonal rational approximants. P.R. Graves-Morris, D.E. Roberts. Other version: ACRT (§4.7) ACRS 9 (1975) 46
ALGOL CALCULATION OF SODS (Algol, 299). A subroutine and procedure for the rapid calculation of simple off-diagonal rational approximants. P.R. Graves-Morris, D.E. Roberts. Other version: ACRS (§4.7) ACRT 9 (1975) 46
FORTRAN CALCULATION OF C.A'S (Fortran, 410). Calculation of Canterbury approximants. P.R. Graves-Morris, D.E. Roberts. Other version: ACWG (§4.7) ACWF 10 (1975) 234
000A CORRECTION 23/02/77 (Fortran) 13 (1977) 72
ALGOL CALCULATION OF C.A'S (Algol, 411). Calculation of Canterbury approximants. P.R. Graves-Morris, D.E. Roberts. Other version: ACWF (§4.7) ACWG 10 (1975) 234
000A CORRECTION 23/02/77 (Algol) 13 (1977) 72
PADE APPROXIMANTS (Fortran, 686). Subroutine for calculation of matrix Pade approximants. Y. Starkand ACWV 11 (1976) 325
BESSEL (Fortran, 536). The Bessel functions J0 and J1 of complex argument. R.W.B. Ardill, K.J.M. Moriarty ACWZ 13 (1977) 17
SPHBES (Fortran, 558). Spherical Bessel functions jn and yn of integer order and real argument. R.W.B. Ardill, K.J.M. Moriarty ACXM 14 (1978) 261
NULLIJN (Fortran, Compass, 4092). NULLIJN: a program to calculate zero curves of a function of two variables of which one may be complex. P.C. de Jagher ACYL 15 (1978) 351
FTRANS (Fortran, 396). On numerical Bessel transformation. B. Sommer, J.G. Zabolitzky ACZC 16 (1979) 383

Computational methods — *Other functions (continued)*

BESJYH (Fortran, 1521). Accurate Bessel functions Jn(z), Yn(z), H(1)n(z) and H(2)n(z) of integer order and complex argument. R.W.B. Ardill, K.J.M. Moriarty ACYQ 17 (1979) 321
000A CORRECTION 30/09/85 (Fortran) 39 (1986) 303
PLMCHB (Fortran, 481). Chebyshev expansion of the associated Legendre polynomial PLM(x). G. Delic ACZN 18 (1979) 63
JLRCHB (Fortran, 418). Chebyshev series for the spherical Bessel function jl(r). G. Delic ACZM 18 (1979) 73
BESSJY (Fortran, 1499). Bessel functions Jnu(x) and Ynu(x) of real order and real argument. J.B. Campbell ACZP 18 (1979) 133
ANALYT (Fortran, 2500). A guide to analytic extrapolations. Part I: a program for optimal extrapolation to interior points. M. Ciulli, S. Ciulli AAUT 18 (1979) 215
RIEMANN ZETA FUNCTION (Fortran, 142). A program for computing the Riemann Zeta function for complex argument. A. Banuelos, R.A. Depine ABVJ 20 (1980) 441
REALJN (Fortran, 625). A Fortran subroutine for the Bessel function Jn(x) of order 0 to 10. J.P. Coleman ABVM 21 (1980) 109
FERMI-DIRAC FUNCTIONS (Fortran, 266). A program for computing the Fermi-Dirac functions. A. Banuelos, R.A. Depine, R.C. Mancini ABVP 21 (1981) 315
AIRY (Fortran, 443). Airy function with complex arguments. W. Moon ABVX 22 (1981) 411
FCONIC (Fortran, 855). A program for computing the conical functions of the first kind Pm(-1/2+i*tau)(x) for m=0 and m=1. K.S. Kolbig AAQH 23 (1981) 51
CHEBY (Fortran, 326). A Chebyshev series approximation to continuous functions. M.A. Christie, K.J.M. Moriarty ABQJ 23 (1981) 145
BESSIK (Fortran, 1955). Bessel functions Inu(z) and Knu(z) of real order and complex argument. J.B. Campbell AAQZ 24 (1981) 97
000A CORRECTION 28/10/81 (Fortran) 25 (1982) 207
LHARM (Fortran, 137). Generating functions for L-harmonics. R.W. Gaskell AARE 24 (1981) 191
F3Y (Fortran, 121). Fortran program for the integral of three spherical harmonics. A.L. de Brito AAQQ 25 (1982) 81
YLM-COUPLING (Fortran, 1143). Programs for the coupling of spherical harmonics. E.J. Weniger, E.O. Steinborn AARL 25 (1982) 149
HANKEL (Fortran, 1345). Automatic computation of Bessel function integrals. R. Piessens AART 25 (1982) 289
COULFG (Fortran, 432). COULFG: Coulomb and Bessel functions and their derivatives, for real arguments, by Steed's method. A.R. Barnett ABNK 27 (1982) 147
FUNEXP (Fortran, 700). An expansion of complicated functions using Chebyshev polynomials suitable for fast calculation. M.O. Caceres, H.S. Wio, R.J.J. Stamm'ler ACEE 29 (1983) 261
LSFBTR (Fortran, 370). LSFBTR: a subroutine for calculating spherical Bessel transforms. J.D. Talman AANZ 30 (1983) 93
PRSWFN (Fortran, 570). Prolate radial spheroidal wave functions. T.A. Beu, R.I. Campeanu ACEY 30 (1983) 177
PASWFN (Fortran, 477). Prolate angular spheroidal wave functions. T.A. Beu, R.I. Campeanu ACEZ 30 (1983) 187
FRANKC (Fortran, 450). Calculation of the auxiliary functions Fm(z). L.F. Errea, L. Mendez, A. Riera ACFL 31 (1984) 47
FZRI (Fortran, 166). A simple procedure for numerical approximation of the Fm(z) functions with complex argument. L. Jakab ACFO 31 (1984) 89
NUZERO (Fortran, 935). Determination of nu-zeros of Hankel functions. J.B. Campbell ACCH 32 (1984) 333
BAO (Fortran, 294). Program to calculate transformation brackets of hyperspherical harmonic functions of a three body system. See erratum Comput. Phys. Commun. 47 (1987) 367. Bao Cheng-guang, Gan You-ping, Lui Xian-hui AABV 36 (1985) 401
FD, FDG, FDH (Fortran, 2119). Generalized Fermi-Dirac integrals – FD, FDG, FDH. L.W. Fullerton, G.A. Rinker AADU 39 (1986) 181
ORTHOGONAL POLYNOMIALS (Fortran, 3938). A program to set up systems of orthogonal polynomials. U. Opik AAXL 46 (1987) 263
GYP (Fortran, 245). Program to calculate Raynal-Revai coefficients of a three-body system in two or three dimensions. Y. Gan, F. Liu, T.K. Lim AAXP 47 (1987) 149
BESSCC (Fortran, 874). Modified Bessel functions Imu(z) and Kmu(z) of real order and complex argument, to selected accuracy. I.J. Thompson, A.R. Barnett ABBM 47 (1987) 245
CCFS (Fortran, 682). Subroutines for convolution sums of Chebyshev and Fourier series. G. Delic, S.M. Malherbe ABBO 48 (1988) 305

4.8. Matrices

MATPLT (Fortran, 107). Isometric representation of two-dimensional matrices. A. Choudry ACQM 1 (1970) 277
COMPLEX GENERALISED EIGENPROBLEM (Fortran, 1007). The hermitian matrix eigenproblem Hx = eSx using compact array storage. J.C. Nash AAAF 8 (1974) 85

Computational methods — *Matrices (continued)*

HYMNIA (Fortran, 2390). HYMNIA – band matrix package for solving eigenvalue problems. R. Gruber ACWC 10 (1975) 30
APICS (Fortran, 691). Application of the generalized backward substitution method to solve a class of linear systems. R. Calinon, J. Ligou ACZJ 17 (1979) 317
LIHOIN (Fortran, 557). A program for solving systems of homogeneous linear inequalities. K.S. Kolbig, F. Schwarz ACZH 17 (1979) 375
GENLU (Fortran, 2070). A program generator for the incomplete LU decomposition-conjugate gradient (ILUCG) method. G.K. Petravic, M. Petravic ABSE 18 (1979) 13
HYMBLO (Fortran, 978). HYMNIABLOCK: eigenvalue solver for blocked matrices. R. Gruber ABVI 20 (1980) 421
GENIC (Fortran, 2961). A program generator for the Incomplete Cholesky Conjugate Gradient (ICCG) method with a symmetrizing preprocessor. G.K. Petravic, M. Petravic ABSF 22 (1981) 33
PERDIAG (Fortran, 447). Recurrence solution of a block tridiagonal matrix equation with Neumann, Dirichlet, mixed or periodic boundary conditions. F. Marsh, D.E. Potter AARF 24 (1981) 185
EIGVEC (Fortran, CAL Assembler, 1763). A vectorizable eigenvalue solver for sparse matrices. L.C. Bernard, F.J. Helton AARI 25 (1982) 73
ILUCG2 (Fortran, 1193). ILUCG2: subprograms for the solution of a linear asymmetric matrix equation arising from a 9-point discretization. See erratum Comput. Phys. Commun. 31 (1984) 433. A.I. Shestakov, D.V. Anderson ACEU 30 (1983) 31
ICCG2 (Fortran, 1012). ICCG2: subprograms for the solution of a linear symmetric matrix equation arising from a 9-point discretization. See erratum Comput. Phys. Commun. 31 (1984) 435. D.V. Anderson, A.I. Shestakov ACEV 30 (1983) 37
ILUCG3 (Fortran, 1857). ILUCG3: subprograms for the solution of a linear asymmetric matrix equation arising from a 7, 15, 19 or 27 point 3D discretization. See erratum Comput. Phys. Commun. 31 (1984) 437. D.V. Anderson ACEW 30 (1983) 43
ICCG3 (Fortran, 1582). ICCG3: subprograms for the solution of a linear symmetric matrix equation arising from a 7, 15, 19 or 27 point 3D discretization. See erratum Comput. Phys. Commun. 31 (1984) 439. D.V. Anderson ACEX 30 (1983) 51
ILUBCG2 (Fortran, 824). ILUBCG2: a preconditioned biconjugate gradient routine for the solution of linear asymmetric matrix equations arising from 9-point discretizations. A.E. Koniges, D.V. Anderson AALX 43 (1987) 297
0001 ILUBCG2-11 (Fortran, 872). ILUBCG2-11: solution of 11-banded nonsymmetric linear equation systems by a preconditioned biconjugate gradient routine. Y.-M. Chen, A.E. Koniges, D.V. Anderson 55 (1989) 359
CPDES2 (Fortran, 1080). CPDES2: a preconditioned conjugate gradient solver for linear asymmetric matrix equations arising from coupled partial differential equations in two dimensions. D.V. Anderson, A.E. Koniges, D.E. Shumaker ABFD 51 (1988) 391
CPDES3 (Fortran, 1143). CPDES3: a preconditioned conjugate gradient solver for linear asymmetric matrix equations arising from coupled partial differential equations in three dimensions. D.V. Anderson, A.E. Koniges, D.E. Shumaker ABFE 51 (1988) 405
EGRASS (Fortran, 54594). epicGRASS: symbolic calculations with anticommuting variables. U. Hartmann, E.D. Davis ABHY 54 (1989) 353
MLS (Fortran, 407). A program for the solution of ill-posed linear systems arising from the discretization of Fredholm integral equation of the first kind. N.N. Abdelmalek ABLZ 58 (1990) 285

4.9. Minimization and fitting (see also interpolation, §4.10)

SEARCH (Fortran, 202). Parameter search subroutine. W.R. Smith ABOD 1 (1969) 135
0001 ADAPT SEARCH TO ELASTIC (Fortran, 2). Adaptation of subroutine SEARCH for use with program ELASTIC. W.R. Smith 1 (1970) 198
NONLINEAR LEAST SQUARES FIT (Fortran, 465). A procedure for nonlinear least squares refinement in adverse practical conditions. J. Lang, R. Muller ABGA 2 (1971) 79
000A CORRECTION 20/11/72 (Fortran) 5 (1973) 308
COMBAT (Fortran, 1036). A program for closed orbit minimization by analytic technique. J.V. Trotman ABCF 5 (1973) 56
OPTIME SYSTEM (Fortran, 10992). Users manual for the OPTIME system. P.H. Eberhard, W.O. Koellner AAYB 5 (1973) 163
LINCOM (Fortran, 968). Search program for significant variables. M.J. O'Connell ABCG 8 (1974) 49
GSFIT (Fortran, 1415). Multivariate least squares fitting program using modified Gram-Schmidt transformations. M.J. O'Connell ABCH 8 (1974) 56
LGFIT2 (Fortran, 1368). A least-squares spectral curve fitting routine for strongly overlapping lorentzians or gaussians. E.D. von Meerwall ABMK 9 (1975) 117

Computational methods — *Minimization and fitting (see also interpolation, §4.10) (continued)*

PEAK2 (Fortran, 1290). A FORTRAN code for automatic spectrum analysis on medium-scale computers. E.D. von Meerwall — ABML 9 (1975) 351

SPEC3 (Fortran, 1004). A general-purpose routine for the analysis of spectroscopic peak shapes. E.D. von Meerwall — ABMM 10 (1975) 145

MINUIT (Fortran, 2891). MINUIT: a system for function minimization and analysis of the parameter errors and correlations. F. James, M. Roos. Other version: AAVP (§4.9) — ACWH 10 (1975) 343

000A CORRECTION 17/02/77 (Fortran). Unpublished correction
Other version: ABNH (§4.9) — ABMR 11 (1976) 211

RENYIF, RENYIT, TESKAC (Fortran, 996). Algorithms for the Kac and Renyi tests. J.M.F. Chamayou — ACXB 12 (1976) 173

FURI (Fortran, 632). FURI: a Fortran function writer. A.J. Barnard — ACXP 13 (1977) 271

BELLS (Fortran, 351). A subroutine for approximation by cubic splines in the least squares sense. J. Bok — AAPA 16 (1978) 113

UNIFIT4 (Fortran, 906). An all-purpose curve-fitting program for functions of several variables. E.D. von Meerwall. Other version: ABMR (§4.9) — ABNH 18 (1979) 411

LOUHI78 (Fortran, 3227). General purpose unfolding program LOUHI78 with linear and nonlinear regularizations. J.T. Routti, J.V. Sandberg — AAVD 21 (1980) 119

DECONV (Fortran, 1540). A spline-based method for experimental data deconvolution. I. Beniaminy, M. Deutsch — ABVR 21 (1980) 271

CONTIN (VERSION 2DP) (Fortran, 5822, Manual 164 pages). CONTIN: a general purpose constrained regularization program for inverting noisy linear algebraic and integral equations. See also Comput. Phys. Commun. 27 (1982) 213. S.W. Provencher — AAOB 27 (1982) 229

CONTIN (VERSION 2SP) (Fortran, 5822, Manual 164 pages). CONTIN: a general purpose constrained regularization program for inverting noisy linear algebraic and integral equations. See also Comput. Phys. Commun. 27 (1982) 213. S.W. Provencher — AAOC 27 (1982) 229

ABEL (Fortran, 1615). ABEL: stable, high accuracy program for the inversion of Abel's integral equation. I. Beniaminy, M. Deutsch — AAOK 27 (1982) 415

MOSAUT AND MOSINP (Fortran, 5613). A program to analyze series of Mossbauer spectra. E. Verbiest — ACEG 29 (1983) 131

ERIKA (Fortran, 1626). ERIKA: a program for the decomposition of line spectra. M. Rysavy, M. Fiser — ACEH 29 (1983) 171

CONCON (Fortran, 4867). CONCON: a code for constrained minimization without derivative computation. A. Buckley — ACEM 29 (1983) 231

CHPACK (Fortran, 2246). CHPACK: a package for the manipulation of Chebyshev approximations. B. D'Aguanno, A. Nobile, E. Roman — ACER 29 (1983) 361

PDP-MINUIT (Fortran, 3363). A new version of MINUIT program for a PDP11/34A computer system. Sp. Dedoussis, M. Chardalas, S. Charalambous. Other version: ACWH (§4.9) — AAVP 31 (1984) 29

ORT1 POLYNOMIAL FIT DIFF/INT (Fortran, 1074). Numerical generation and use of orthonormal polynomials I. ORT1 – a one-dimensional package for the solution of fitting, differentiation and integration problems. V. Gadjokov, J. Jordanova — ACFM 31 (1984) 53

CENTER (Fortran, 5658). CENTER: a software package for center estimation. S.B. Hooker, J.W. Brown. Subroutine required: AADI (§4.14) — AADH 38 (1985) 421

LINRZ (Fortran, 986). Matrix linearization. L. Seijo, M. Florez, L. Pueyo — AALI 42 (1986) 127

SMOOTHF (Fortran, 93). Smoothing of data by least squares fitting. C. Wooff — AALM 42 (1986) 249

SMOOTHR (Reduce, 141). Generation of a smoothing function. C. Wooff — AALN 42 (1986) 253

POAGS (Fortran, 390). A routine for parameter optimization using an accelerated grid-search method. Z. Basrak — AATU 46 (1987) 149
Other version: ABHB (§4.9) — AAXW 46 (1987) 401

CNFIT (Fortran, 426). Constrained nonlinear least squares fitting. R. Shally — AAXQ 46 (1987) 437

MCL (Fortran, 9911, Manual 129 pages). MCL: optimization oriented programming language. C.S. Chassapis, D.G. Papageorgiou, I.E. Lagaris — ABHA 52 (1989) 223

MERLIN-2.0 PROGRAMMABLE (Fortran, 6956, Manual 54 pages). MERLIN-2.0: Enhanced and programmable version. D.G. Papageorgiou, C.S. Chassapis, I.E. Lagaris. Subroutine required: ABHA (§4.9). Other version: AAXW (§4.9) — ABHB 52 (1989) 241

0001 MERLIN-2.1 DOUBLE PRECISION (Fortran, 7502). MERLIN-2.1 Double precision. D.G. Papageorgiou, I.E. Lagaris — 58 (1990) 119

POLYFIT (Pascal, 3072). POLYFIT: a package for polynomial fitting. S.J. Sciutto — ABFP 52 (1989) 427

GFIT (Fortran, 667). GFIT: program for generalized quadratic approximation of functions under constraints. V.B. Zlokazov — ABHX 54 (1989) 371

Computational methods — *Minimization and fitting (see also interpolation, §4.10) (continued)*

GSAP (Fortran, 731). GSAP: Fortran code for gamma-spectrum analysis. V. Hnatowicz, V. Ilyushchenko, P. Kozma — ABRT 60 (1990) 111

4.10. Interpolation

CUSPLN (Fortran, 828). A cubic spline interpolation of unequally spaced data points. J. Anderson, R.W.B. Ardill, K.J.M. Moriarty, R.C. Beckwith. Subroutines required: AAUN (§14), AAUN0001 — ACYV 16 (1979) 199
JMPDIS (Fortran, 477). An interpolation method for data sets with jump discontinuities. W. Moon — ACYW 16 (1979) 273
BISPLN (Fortran, 749). A bicubic spline interpolation of unequally spaced data. M.A. Christie, K.J.M. Moriarty — ACZG 17 (1979) 357
ANALYT (Fortran, 2500). A guide to analytic extrapolations. Part I: a program for optimal extrapolation to interior points. M. Ciulli, S. Ciulli — AAUT 18 (1979) 215
SPLINESMOOTH (Fortran, 832). Spline interpolation and smoothing of data. R.E. Cutkosky, C. Pomponiu — AAQO 23 (1981) 287
FINT (Fortran, 672). Newton-Everett interpolation of continuous functions. J.A. Hernando — AARS 27 (1982) 73
LSPLIN (Fortran, 1228). An exponential spline interpolation for unequally spaced data points. V. Tornow — AAOW 28 (1982) 61
LNIDIF (Fortran, 728). Routines for numerical interpolation, with first and second order differentiation, having non-uniformly spaced points, out to three dimensions. J. Waite — AAXJ 46 (1987) 323

4.11. Quadratures

KOROBO (Fortran, 417). A numerical calculation of multidimensional integrals. K. Zakrzewska, J. Dudek, W. Nazarewicz — ACXU 14 (1978) 299
QADAPT (Fortran, 1229). Two-dimensional adaptive quadrature over rectangular regions. P.C. Lewellen — AAZA 27 (1982) 167
MDAI (Fortran, 1077). Multidimensional automatic integrator (MDAI) – an efficient routine for automatic integration of functions of many variables. W. Nazarewicz, M. Pindor — ACUI 31 (1984) 1
GISP (Fortran, 842). GISP: Gauss-integration subroutine pack. M. Rysavy — AAPE 32 (1984) 191
GAUSSH (Fortran, 261). Abscissae and weights for the Gauss-Hermite quadrature formula. T. Takemasa — ABBL 48 (1988) 265
VBASES (Fortran, 2474). A multi-dimensional integration package for vector processor. S. Kawabata, T. Kaneko — ABBU 48 (1988) 353
GAUSSLA (Fortran, 414). Abscissae and weights for the Gauss-Laguerre quadrature formula. T. Takemasa — ABFJ 52 (1988) 133
R3DGL (Fortran, 372). Numerical integration over a spherical shell. M. Defranceschi, M. Sarrazin — ABFT 52 (1989) 409

4.12. Other numerical methods

ERRCAL (Fortran, 699). A general purpose Monte-Carlo program. P. Dufour, J. Schlesinger — AAUP 9 (1975) 360
000A CORRECTION 05/08/75 (Fortran). Unpublished correction
FTRANS (Fortran, 396). On numerical Bessel transformation. B. Sommer, J.G. Zabolitzky — ACZC 16 (1979) 383
FHT (Fortran, 525). A method and a program for the numerical evaluation of the Hilbert transform of a real function. O.E. Taurian — ABVD 20 (1980) 291
RECT (Fortran, 543). Orthogonalization of discrete coordinates. C.W. Davies — AAQW 23 (1981) 427
TETRAHEDRAL MATRIX PRIMITIVES (Fortran, 930). Tetrahedral finite element matrix primitives. P.P. Silvester, F.U. Minhas, Z.J. Csendes — AARB 24 (1981) 173
RATRT, REDUSE (PDP Assembler, Fortran, 1745). Micro/mini computer program for calculating the square root of rationals at arbitrary precision. J. Demsky, M. Schlesinger, R.D. Kent — ACEQ 29 (1983) 237
CRTEST (Fortran, 2063). Complex zeros of analytic functions. L.C. Botten, M.S. Craig, R.C. McPhedran — AAOO 29 (1983) 245
BIRKHOFF (Fortran, 857). A computer program for the Birkhoff series of area preserving maps. G. Servizi, G. Turchetti — ACCD 32 (1984) 201
KUBIK (Fortran, 5692). Automatic three-dimensional finite element mesh generation using the program KUBIK. See also Comput. Phys. Commun. 32 (1984) 267. S. Pissanetzky — AAVO 32 (1984) 245
RECLIB (Fortran, 1999). The recursion method: processing the continued fraction. C.M.M. Nex — ACDL 34 (1984) 101
MODST (Reduce, 803). Program for stability and accuracy analysis of finite difference methods. R. Liska — ACDF 34 (1984) 175
F1REGU (Fortran, 321). A program for solving first kind Fredholm integral equations by means of regularization. H.J.J. te Riele — AABX 36 (1985) 423

4.13. Statistical methods

ERRCAL (Fortran, 699). A general purpose Monte-Carlo program. P. Dufour, J. Schlesinger — AAUP 9 (1975) 360
000A CORRECTION 05/08/75 (Fortran). Unpublished correction

Computational methods — *Statistical methods (continued)*

SRNG (Fortran, 106). Sequential random integer generator. C.T.K. Kuo, T.W. Cadman, R.J. Arsenault ACIE 12 (1976) 163
MATRIXFORMAT, CLSSCLFORMAT (Fortran, 2563). An inversion of quantum mechanics. E. Lubkin, T. Lubkin ACYP 16 (1979) 207
SMOOS,SMOSI (Fortran, 237). SMOOS: a program for the filtration of non-stationary statistical series. V.B. Zlokazov ABVQ 21 (1981) 373
SUBROUTINE PACKAGE SAMPLE (Fortran, 768). Algorithms for random sampling from single-variate distributions. F. Salvat AAXT 46 (1987) 427
PSEUDORAN (Fortran, 367). A review of pseudorandom number generators. F. James ABTK 60 (1990) 329
ACARRYPC (Assembler, 736). A random number generator for PC's. G. Marsaglia, B. Narasimhan, A. Zaman ABTL 60 (1990) 345

4.14. Utility

CONV (Fortran, 276). Conversion of binary magnetic tapes. J. Goldberg ABCA 1 (1970) 420
CODNUM (Fortran, 294). A program to change the punching code and to number a deck of cards. F.R. Femenia ACQU 2 (1971) 168
OLYMPUS (Fortran, 2425). OLYMPUS – a standard control and utility package for initial-value Fortran programs. J.P. Christiansen, K.V. Roberts. Other versions: ABUJ (§4.14), ABUK (§4.14) ABUF 7 (1974) 245
TIMER (Fortran, 545). TIMER – a software instrumentation routine for making timing measurements. M.H. Hughes, A.P.V. Roberts ABUH 8 (1974) 118
LEDGER (Fortran, 571). OLYMPUS restart facilities. M.H. Hughes, K.V. Roberts ABUI 8 (1974) 123
OLYMPUS FOR IBM 370/165 (Fortran, 2412). OLYMPUS and preprocessor package for an IBM 370/165. M.H. Hughes, K.V. Roberts, P.D. Roberts. Other versions: ABUF (§4.14), ABUK (§4.14) ABUJ 9 (1975) 51
OLYMPUS FOR CDC 6500 (Fortran, Compass, 2170). OLYMPUS control and utility package for the CDC 6500. M.H. Hughes, K.V. Roberts, G.G. Lister. Other versions: ABUF (§4.14), ABUJ (§4.14) ABUK 10 (1975) 167
TRANAL (Algol, 700). TRANAL: a program for the translation of Symbolic Algol I into Symbolic Algol II. L.G.K. Petravic, M. Petravic, K.V. Roberts ABUN 11 (1976) 5
FORMAT AND DATA CONVERTER (Fortran, 1304). Converter of FORTRAN format and data statements to standard form. M. Salem ACWP 11 (1976) 199
STRING REPLACEMENT PROGRAM (Fortran, 283). A portable text editor. C. Day ACXJ 13 (1977) 101
WORKER (Fortran, MACRO, 4920). WORKER: a program for histogram manipulation. J.E. Bolger, H. Ellinger, C.F. Moore ABPH 16 (1979) 345
CDC PARTITIONED DATA SETS (Fortran, Compass, 1219). Implementation of the partitioned-data-set concept for CDC computers. J.R. Comfort ACZQ 19 (1980) 51
EDITOR (Fortran, 917). EDITOR: a program for amending files of card images. M.A. Crees ACZZ 19 (1980) 139
UPDATE (Fortran, 2712). A Fortran system to maintain a program library. 1. Storage of the program decks in magnetic tape files. V.M. Burke, C. Jackson AANE 22 (1981) 59
0001 ADAPT FOR FREE FORMAT DATA (Fortran, 110). A Fortran system to maintain a program library, adapt UPDATE to store decks containing free format data. C. Jackson 38 (1985) 113
RETRIEVE (Fortran, 1197). A Fortran system to maintain a program library. 2. Retrieval of program decks from the library files. V.M. Burke, C. Jackson AANF 22 (1981) 77
0001 ADAPT FOR FREE FORMAT DATA (Fortran, 28). A Fortran system to maintain a program library, adapt RETRIEVE for retrieval of decks containing free format data. C. Jackson 38 (1985) 115
CPSN (Fortran, 186). A Fortran system to maintain a program library. Auxiliary program 1 for RETRIEVE. V.M. Burke, C. Jackson AANG 22 (1981) 77
CPIN (Fortran, 160). A Fortran system to maintain a program library. Auxiliary program 2 for RETRIEVE. V.M. Burke, C. Jackson AANH 22 (1981) 77
CREC (Fortran, 345). A Fortran system to maintain a program library. Auxiliary program 3 for RETRIEVE. V.M. Burke, C. Jackson AANI 22 (1981) 77
FSCRIPT (Fortran, 1720). FSCRIPT: a full portable text formatting program. O.E. Taurian ABVY 22 (1981) 85
RDLIST AND PREPROCESSOR MAKEDATA (Fortran, 737). RDLIST: a portable NAMELIST facility. A.C. Day AANJ 22 (1981) 403
INDCAL (PDP Assembler, Fortran, 550). A microcomputer program for the correlating of two ordered lists of numbers. R.D. Kent, M. Schlesinger AAQR 23 (1981) 301
WORD ADDRESSABLE DATA SET (MACRO, 1457). Design and implementation of a word addressable data set for DEC-10 computers. B.C. Karp, J.R. Comfort AAQS 23 (1981) 355

Computational methods — *Utility (continued)*

DEC-10 PARTITIONED DATA SETS (Fortran, MACRO, 1697). Implementation of the partitioned data set concept for DEC-10 computers. B.C. Karp, J.R. Comfort. Subroutine required: AAQS (§4.14) AAQT 23 (1981) 365
EQSYSTM (PL/1-FORMAC73, 1986). A flexible program for performing analytic differentiation and substitutions on a system of equations. D.W. Merdes, J. Pliva AAQX 24 (1981) 113
COMPOS (Fortran, 5496). The OLYMPUS Fortran compositor. M.H. Hughes, K.V. Roberts. Subroutine required: ABUF (§4.14) or ABUJ (§4.14) or ABUK (§4.14) ACEA 29 (1983) 45
GENSIS (Fortran, 7759). The OLYMPUS Fortran generator. M.H. Hughes, K.V. Roberts. Subroutine required: ABUF (§4.14) or ABUJ (§4.14) or ABUK (§4.14) ACEB 29 (1983) 59
ABACUS (Fortran, 3742). ABACUS: a natural language for the numerical computation of mathematical formulae. M.L. Luvisetto, E. Ugolini ACFC 30 (1983) 277
TESTSUB (Fortran, 386). User-friendly routines for tree storage and retrieval of multidimensional arrays. P.B. Visscher ACMT 31 (1984) 319
MODST (Reduce, 803). Program for stability and accuracy analysis of finite difference methods. R. Liska ACDF 34 (1984) 175
FORMINT (PL/1-FORMAC, 342). FORMINT: a program for the classification of integrable nonlinear evolution equations. V.P. Gerdt, A.B. Shvachka, A.Yu. Zharkov ACDJ 34 (1985) 303
COMMS (Reduce, 80). A REDUCE program for evaluating a Lax pair form. M. Ito ACDE 34 (1985) 325
FORMAL (Fortran, 934). FORMAL: a Fortran memory allocation system. K. Dobes AABK 36 (1985) 147
FIXSRC (Fortran, 299). FIXSRC: a Fortran preprocessor. J.W. Brown, S.B. Hooker AADI 38 (1985) 435
FTIDY (Pascal, 4134). FTIDY: a utility program for Fortran 77 programs. K.M.H. Boyd, N.S. Scott AAFM 39 (1986) 421
CXHULL (Fortran, 669). Computing the convex hull of a set of points. D.C.S. Allison, M.T. Noga AATI 43 (1987) 381
TRCG (8086/87 Assembly Language, Pascal, 1037). A shift-register sequence random number generator implemented on the microcomputers with 8088/8086 and 8087. Ting-Wai Chiu, Tian-Shin Guu AAXI 47 (1987) 129
MISHA (Fortran, 2456). MISHA: a system for calculations with arbitrary arithmetic precision. M. Rysavy AAXU 47 (1987) 351
TOPREC (OPS5, 847). A rule based approach for pattern recognition in planar geometric figures. L. Alvisi, R. Odorico ABDG 51 (1988) 443
VECTOR33 (Rlisp, Reduce, 1467, Manual 9 pages). VECTOR33: a Reduce program for vector algebra and calculus in orthogonal curvilinear coordinates. D. Harper ABJC 54 (1989) 295
BBTREE (Fortran, 644). Balanced binary tree code for scientific applications. S.C. Park, J.P. Draayer ABJR 55 (1989) 189
LEVIN (Maple, 879). MAPLE programs for converting series expansions to rational functions using the Levin transformation. Automatic generation of Fortran functions for numerical applications. J. Grotendorst ABLG 55 (1989) 325
BH (Maple, 1163). Approximating functions by means of symbolic computation and a general extrapolation method. J. Grotendorst ABRN 59 (1990) 289
MP (Fortran, 1653). MP: a multiple precision package. O. Portilho ABRJ 59 (1990) 345
CYLSPHER (Fortran, 306). Evaluation of the volume of intersection of a sphere with a cylinder by elliptic integrals. F. Lamarche, C. Leroy ABRH 59 (1990) 359

5. Computer algebra

CLEBSCH-GORDAN EXPLICIT FORMULAS (Formac, 185). Explicit formulas for Clebsch-Gordan coefficients. G. Rudnicki-Bujnowski ACWL 10 (1975) 245
EQSYSTM (PL/1-FORMAC73, 1986). A flexible program for performing analytic differentiation and substitutions on a system of equations. D.W. Merdes, J. Pliva AAQX 24 (1981) 113
LIE0, LIE1, LIE2, LIE3, LIE4 (LISP, 246). A REDUCE package for determining Lie symmetries of ordinary and partial differential equations. F. Schwarz AAZB 27 (1982) 179
MODST (Reduce, 803). Program for stability and accuracy analysis of finite difference methods. R. Liska ACDF 34 (1984) 175
FORMINT (PL/1-FORMAC, 342). FORMINT: a program for the classification of integrable nonlinear evolution equations. V.P. Gerdt, A.B. Shvachka, A.Yu. Zharkov ACDJ 34 (1985) 303
COMMS (Reduce, 80). A REDUCE program for evaluating a Lax pair form. M. Ito ACDE 34 (1985) 325
LIE (Reduce, 132). A REDUCE program for determining point and contact lie symmetries of differential equations. V.P. Eliseev, R.N. Fedorova, V.V. Kornyak AABS 36 (1985) 383
DRANK, CONSD, CONSD2 (Reduce, Rlisp, 581). A REDUCE program for finding conserved densities of partial differential equations with uniform rank. M. Ito, F. Kako AADG 38 (1985) 415
TAVI (Reduce, 170). A REDUCE program for the calculation of geometrical characteristics of compactified multidimensional Riemannian space. A.P. Demichev, A.Ya. Rodionov AADJ 38 (1985) 441

Computer algebra *(continued)*

POWER SERIES BY REDUCE (Reduce, 280). REDUCE procedures for the manipulation of generalized power series. E. Feldmar, K.S. Kolbig AAFE 39 (1986) 267
DISSYS (RLISP, 931). A REDUCE package for determining first integrals of autonomous systems of ordinary differential equations. F. Schwarz AAFF 39 (1986) 285
SMOOTHR (Reduce, 141). Generation of a smoothing function. C. Wooff AALN 42 (1986) 253
DRANK, DRANK2, SYM, SYM2, SYMS (Reduce, Rlisp, 913). A REDUCE program for finding symmetries of nonlinear evolution equations with uniform rank. M. Ito AALS 42 (1986) 351
ODEPAINLEVE (REX MACSYMA, 305). ODEPAINLEVE: a MACSYMA package for Painleve analysis of ordinary differential equations. D.W. Rand, P. Winternitz AALT 42 (1986) 359
TPR (Reduce, 131). Tests of resonances in the Painleve analysis. L. Hlavaty AATA 42 (1986) 427
SPLIT (Pascal, 4169). PASCAL programs for identification of lie algebras, part II: SPLIT, a program to decompose parameter-free and parameter-dependent lie algebras into direct sums. D.W. Rand, P. Winternitz, H. Zassenhaus. Subroutine required: AALB (§4.2) AAXM 46 (1987) 297
LEVI (Pascal, 1163). PASCAL programs for identification of lie algebras, part III: Levi decomposition and canonical basis. D.W. Rand. Subroutines required: AALB (§4.2), AAXM (§5) AAXN 46 (1987) 311
CANONIK (Pascal, 1082). PASCAL programs for identification of lie algebras, part III: Levi decomposition and canonical basis. D.W. Rand. Subroutines required: AALB (§4.2), AAXM (§5) AAXO 46 (1987) 311
ORTHOVEC (Reduce, 440). ORTHOVEC: a REDUCE program for 3-D vector analysis in orthogonal curvilinear coordinates. J.W. Eastwood AAXY 47 (1987) 139
R12 INTERACTION MATRIX ELEMENTS (Reduce, 595). A Reduce package for exact Coulomb interaction matrix elements. N. Bogdanova, H. Hogreve ABBN 48 (1988) 319
COLOR (Reduce, 469). Program COLOR for computing the group-theoretic weight of Feynman diagrams in non-Abelian gauge theories. A.P. Kryukov, A.Ya. Rodionov AAXC 48 (1988) 327
LERG-I (Reduce, 1251). Algebraic reduction of one-loop Feynman diagrams to scalar integrals. R.G. Stuart. Other version: ABLU (§5) ABBX 48 (1989) 367
DOP (Reduce, RLISP, 1045). A REDUCE program for Hirota's bilinear operator and Wronskian operations. M. Ito ABDE 50 (1988) 321
PHISYM (Reduce, 261). An algebraic program for the states associated with the U(5) include O(5) include O(3) chain of groups. C. Yannouleas, J.M. Pacheco ABFN 52 (1988) 85
LIENARD (Maple, 352). Resolution of many particle electrodynamics by symbolic manipulation. T.C. Scott, R.A. Moore, M.B. Monagan ABFX 52 (1989) 261
VSPLAD (COMMON LISP, 1700). Symbolic lie algebras manipulations using COMMON LISP. R. Cecchini, M. Tarlini ABFW 52 (1989) 283
VECTOR33 (Rlisp, Reduce, 1467, Manual 9 pages). VECTOR33: a Reduce program for vector algebra and calculus in orthogonal curvilinear coordinates. D. Harper ABJC 54 (1989) 295
PHIMANIP (Reduce, 665). Algebraic manipulation of the states associated with the U(5) include O(5) include O(3) chain of groups: orthonormalization and matrix elements. C. Yannouleas, J.M. Pacheco. Subroutine required: ABFN (§5) ABJA 54 (1989) 315
EGRASS (Fortran, 54594). epicGRASS: symbolic calculations with anticommuting variables. U. Hartmann, E.D. Davis ABHY 54 (1989) 353
SPROC (Fortran, 6626). A preprocessor for Fortran source code produced by REDUCE. T. Kaneko, S. Kawabata ABLB 55 (1989) 141
LOOPS (Reduce, 663). LOOPS: procedures for multiloop calculations in quantum field theory for system REDUCE. L.R. Surguladze, F.V. Tkachov ABJO 55 (1989) 205
LEVIN (Maple, 879). MAPLE programs for converting series expansions to rational functions using the Levin transformation. Automatic generation of Fortran functions for numerical applications. J. Grotendorst ABLG 55 (1989) 325
MINCER (SCHOONSCHIP, 3707). MINCER: multiloop calculations in quantum field theory for system SCHOONSCHIP. S.G. Gorishny, S.A. Larin, L.R. Surguladze, F.V. Tkachov ABJQ 55 (1989) 381
FIVE PARTON CROSS SECTION (Reduce, Fortran, 2656). Cross section for five-parton production in e+e- annihilation. N.K. Falck, D. Graudenz, G. Kramer ABLH 56 (1989) 181
LERG-I (Reduce, 2595). Algebraic reduction of one-loop Feynman diagrams to scalar integrals II. R.G. Stuart, A. Gongora-T. Other version: ABBX (§5) ABLU 56 (1990) 337
SPINORP (Pascal, 3441). Calculation of QED graphs with spinor technique. H. Perlt, J. Ranft, J. Heinrich ABLN 56 (1990) 385

Computer algebra *(continued)*

SUSYCAL (Pascal, 3463). SUSYCAL: symbolic computations in supersymmetric theories. T. Kreuzberger, W. Kummer, M. Schweda ABLW 58 (1990) 89
BH (Maple, 1163). Approximating functions by means of symbolic computation and a general extrapolation method. J. Grotendorst ABRN 59 (1990) 289
GRAAL (Common Lisp, 1946). Symbolic superalgebra manipulations using Common Lisp. R. Cecchini, M. Tarlini ABRY 60 (1990) 265

6. Computer languages, hardware and software

6.1. Hardware

No programs classified under this heading yet.

6.2. Languages

MCL (Fortran, 9911, Manual 129 pages). MCL: optimization oriented programming language. C.S. Chassapis, D.G. Papageorgiou, I.E. Lagaris ABHA 52 (1989) 223

6.3. Networks

No programs classified under this heading yet.

6.4. Neural networks

No programs classified under this heading yet.

6.5. Software

PRACAH (OCCAM, 435). The parallel computation of Racah coefficients using transputers. N.S. Scott, P. Milligan, H.W.C. Riley AAXE 46 (1987) 83
FORTNET V2.2 (Occam, Fortran, 1572). Parallel Fortran in scientific computing: a new occam harness called Fortnet. R.J. Allan, L. Heck, S. Zurek ABRK 59 (1990) 325

7. Condensed matter and surface science

7.1. Defects

GRAINS (Fortran, 1826). Computer simulation of extended defects in metals. R.E. Dahl Jr., J.R. Beeler Jr., R.D. Bourquin ACQY 2 (1971) 301
NONLIN (Fortran, 494). Nonlinear computation of anisotropic elastic fields about straight edge dislocations. P. Petrasch ACKK 11 (1976) 279
ANISCO (Algol, 1278). Computation of the anisotropic cubic elastic Green's tensor function and the elastic energy coefficients of point defects in crystals. R.K. Leutz, R. Bauer ACKL 11 (1976) 339
SROCASE (Fortran, 555). A program for the study of short range order of binary alloys. G.L. Bleris, Ch. Polatoglou ACKN 13 (1977) 49
RANDOM VACANCY MIGRATION (Fortran, 718). Computer simulation of correlated self-diffusion via randomly migrating vacancies in cubic crystals. D. Wolf, K. Differt ACKO 13 (1977) 167
0001 CORRELATION FACTOR AND NMR (Fortran, 169). Determination of correlation factor and NMR diffusion parameters from the computer-simulated random motion of vacancies in cubic crystals. D. Wolf, K. Differt, H. Mehrer 13 (1977) 183
CLUSTER 78 (Fortran, 4180). Calculation of the nucleation and growth of defect clusters. P.B. Kruger, R.M. Mayer ACUE 18 (1979) 385
DIFSEG (Fortran, 911). A program to solve a solute diffusion problem with segregation at a moving interface. M. Bakker, D. Hoonhout ABVZ 22 (1981) 439
HEXALAT (Fortran, 445). Two subroutines for calculating lattice sums and the distortion field due to a point force in hexagonal systems. W. Maysenholder ACKQ 24 (1981) 89
POINT DEFECTS IN CRYSTALS (Fortran, 4343). Shell model calculations of point defect formation energies in cubic ionic crystals. D.D. Richardson AAOL 28 (1982) 75
GB1, GB2, GB3 (Fortran, 1344). A programming package for the study of high angle grain boundaries by using TEM. G.L. Bleris, Th. Karakostas, P. Delavignette AAOS 28 (1983) 287

GFCUBE (Fortran, 353). Program to calculate elastic Green's functions, displacement fields and interaction energies in cubic materials. J.W. Deutz, H.R. Schober — ACMS 30 (1983) 87

VIDSIM VER. 2.11 (C, 14211). VIDSIM: a Monte Carlo program for the simulation of atomic diffusion in diamond and zinc-blende structures. U. Schmid, N.C. Myers, J.A. Van Vechten — ABRF 58 (1990) 329

7.2. Electron spectroscopies

LEED (Fortran, 1087). Program for calculating LEED intensities using band structure-matching formalism. V. Hoffstein — ACMH 2 (1971) 341

ICMLEED-MATRIX INVERSION (Fortran, 1909). Program for calculating LEED intensities based on the inelastic collision model: I. Matrix inversion method. V. Hoffstein — ACMK 7 (1974) 50

Other version: ACKG (§7.2) — ACKE 7 (1974) 369

WORK (Fortran, 238). Program for calculating work functions from photoelectric data. I.F. Kerr, C.H.B. Mee — ACKF 7 (1974) 419

LEED BEAM-SYMMETRIZED (Fortran, 1989). Symmetrization and calculation of LEED intensity patterns. J. Rundgren, A. Salwen. Other version: ACKE (§7.2) — ACKG 9 (1975) 312

000A CORRECTION 12/09/75 (Fortran). Unpublished correction

PEOVER1 (Fortran, 4743). Calculation of photoemission spectra for surfaces of solids. J.F.L. Hopkinson, J.B. Pendry, D.J. Titterington — ACZY 19 (1980) 69

000A CORRECTION 31/01/83 (Fortran) — 29 (1983) 417

ELECTRONS REFLECTED BY SURFACE (Fortran, 1623). A program for calculation of the reflection and transmission of electrons through a surface potential barrier. G. Malmstrom, J. Rundgren — ACKR 19 (1980) 263

CAVLEED (Fortran, 4875). Calculation of LEED diffracted intensities. D.J. Titterington, C.G. Kinniburgh — ABVB 20 (1980) 237

000A CORRECTION 09/01/81 (Fortran) — 22 (1981) 103

Other versions: ABDF (§7.2), ABRS (§7.2) — ACUF 21 (1980) 91

Other version: AARR (§7.2) — AARR 25 (1982) 193

EELSOV (Fortran, 4263). Calculation of the impact scattering contribution to electron energy loss spectra. G.C. Aers, J.B. Pendry — AARU 25 (1982) 389

DLEED (Fortran, 2608). Calculation of elastic diffuse LEED intensities from disordered adsorbates. D.K. Saldin, J.B. Pendry — AALY 42 (1986) 399

TAUMOL (Fortran, 2454). Calculation of the renormalised electron scattering matrix of a molecule adsorbed on a crystal surface. D.K. Saldin, J.B. Pendry — AAXA 46 (1987) 129

Other versions: ACUF (§7.2), ABRS (§7.2) — ABDF 51 (1988) 451

TLEED1 (Fortran, 4522). Tensor LEED I: a technique for high speed surface structure determination by low energy electron diffraction. TLEED1. P.J. Rous, J.B. Pendry — ABHN 54 (1989) 137

TLEED2 (Fortran, 3882). Tensor LEED II: a technique for high speed surface structure determination by low energy electron diffraction. TLEED2. P.J. Rous, J.B. Pendry. Subroutine required (for data): ABHN (§7.2) — ABHO 54 (1989) 157

MIDS (Fortran, 632). Electron diffraction simulation on Micro-VAX II computers with the aid of an array processor. G.Y. Fan — ABLK 59 (1990) 429

EXAFS (13,23,33,43,53,63) (Fortran, 3101). Fourier analysis of EXAFS and XANES data: a self-contained Fortran program-package: the third version. N. Aldea, E. Indrea. Other versions: ACUF (§7.2), ABDF (§7.2) — ABRS 60 (1990) 145

HREELS of multilayers (Fortran, 1553). Computation of the surface electron-energy-loss spectrum in specular geometry for an arbitrary plane-stratified medium. Ph. Lambin, J.-P. Vigneron, A.A. Lucas — ABTI 60 (1990) 351

7.3. Electronic structure

DATA FOR ACMD, ACME, ACMF, ACMJ (Fortran, 740). Luehrmann tables. V. Hoffstein — AAB* 2 (1971) 11

SYMMETRY AND BAND STRUCTURE 1 (Fortran, 397). Selection of reciprocal lattice vectors. V. Hoffstein, O. Moller — ACMD 2 (1971) 11

000A CORRECTION 17/12/74 (Fortran). Unpublished correction

SYMMETRY AND BAND STRUCTURE 2 (Fortran, 528). Storage and retrieval of group theoretical information. V. Hoffstein, O. Moller — ACME 2 (1971) 17

SYMMETRY AND BAND STRUCTURE 3 (Fortran, 489). Construction of symmetrized Hamiltonian matrix. V. Hoffstein, O. Moller. Subroutine required: ACME (§7.3) — ACMF 2 (1971) 26

CRYSTAL FIELD AND G VALUE (Fortran, 1588). Lanthanide crystal field fitting routine. G.E. Stedman — ACAB 2 (1971) 191

Condensed matter and surface science — *Electronic structure (continued)*

SYMMETRIZED APW (Fortran, 2130). Symmetrized program for calculating energy bands and electronic structure of solids. V. Hoffstein, D.K. Ray, M. Belakhovsky — ACMJ 4 (1972) 361

0001 SYMMETRY AND BANDSTRUCTURE (Fortran, 39). Symmetry and bandstructure. J.Th.M. de Hosson — 10 (1975) 67

CRYSTAL POTENTIALS (Fortran, 2012). Calculation of crystal potentials. D.A. Papaconstantopoulos, W.R. Slaughter — ACID 7 (1974) 207

000A CORRECTION 23/02/77 (Fortran) — 13 (1977) 225

BNDPKG (Fortran, 8656). BNDPKG: a package of programs for the calculation of electronic energy bands by the LCGO method. C.S. Wang, J. Callaway — ACXZ 14 (1978) 327

GRINT (Fortran, 83). Gilat-Raubenheimer method for k-space integration. A. Simunek — AAPC 20 (1980) 349

AVA (Fortran, 310). A program for calculating the structure factors of liquid metals and binary liquid alloys. Md.M. Islam — ACKT 23 (1981) 43

EBCLP (Fortran, 358). Band structure calculations of cubic semiconductors on the basis of Lowdin's perturbation technique. D.R. Masovic, F. Vukajlovic — AARC 24 (1981) 181

SPINORB (Fortran, 1350). Band structure calculations of cubic metals, elementary semiconductors and semiconductor compounds with spin-orbit interaction. D.R. Masovic, F.R. Vukajlovic — ACKV 30 (1983) 207

BAPAR (Fortran, 480). Parametrization of the band structure of F.C.C. crystals. C. Salustri — ACKU 30 (1983) 271

RECLIB (Fortran, 1999). The recursion method: processing the continued fraction. C.M.M. Nex — ACDL 34 (1984) 101

MAGFAC (Fortran, 2503). A program to calculate magnetic form factors for transition metal systems. L.A. Barnes, G.S. Chandler, B.N. Figgis, D.C. Khan — AABR 36 (1985) 373

Other versions: AAXZ (§7.3), ABFF (§7.3) — AADF 38 (1985) 403

SURFACE GREEN'S FUNCTION VER. 2 (Fortran, 3908). A new version of the program for the calculation of the Green's function for a crystal surface or interface. F. Maca, M. Scheffler. Other versions: AADF (§7.3), ABFF (§7.3) — AAXZ 47 (1987) 349

RUMPGF (Fortran, 4743). Surface Green's function for a rumpled crystal surface. F. Maca, M. Scheffler. Other versions: AADF (§7.3), AAXZ (§7.3) — ABFF 51 (1988) 381

WIEN (Fortran, 78228). Full-potential, linearized augmented plane wave programs for crystalline systems. P. Blaha, K. Schwarz, P. Sorantin, S.B. Trickey — ABRE 59 (1990) 399

LKKR (Fortran, 9338). Layer Korringa-Kohn-Rostoker electronic structure code for bulk and interface geometries. J.M. MacLaren, S. Crampin, D.D. Vvedensky, R.C. Albers, J.B. Pendry — ABRZ 60 (1990) 365

7.4. Experimental analysis

Other versions: AAGX (§7.4), AAGZ (§7.4), AAHI (§7.4), AANN (§7.4), ACKX (§7.4) — AAGK 3 (1972) 240

Other versions: AAGK (§7.4), AAGZ (§7.4), AAHI (§7.4), AANN (§7.4), ACKX (§7.4) — AAGX 7 (1974) 401

ASYMMETRY PARAMETER IN NQR (Fortran, 1355). Exact computation of the Zeeman effect on nuclear quadrupole resonance profiles for powders (spin I = 3/2). Determination of the asymmetry parameter. J. Darville, A. Gerard — ACKH 9 (1975) 173

EPR SPIN HAMILTONIAN PARAMETERS (Fortran, 1147). Program for optimal computation of EPR spin-Hamiltonian parameters for ions in tetragonal symmetry. A.S. Stefanescu — ACKI 11 (1976) 257

SROCASE (Fortran, 555). A program for the study of short range order of binary alloys. G.L. Bleris, Ch. Polatoglou — ACKN 13 (1977) 49

HEQSIM2 (Fortran, 988). A Fortran program to simulate quadrupole-distorted NMR powder patterns. E.D. von Meerwall — ABMW 13 (1977) 107

KRONIG (Fortran, 101). Numerical solution of Kramers-Kronig transforms by a Fourier method. S.J. Collocott — ACMN 13 (1977) 203

0001 TRAPZAL (Fortran, 15). Adaptation: numerical solution of the Kramers-Kronig transforms by trapezoidal summation as compared to a Fourier method. S.J. Collocott, G.J. Troup — 17 (1979) 393

DBLCON (Fortran, 1336). DBLCON: a version of POSITRONFIT with non-Gaussian prompt for analysing positron lifetime spectra. W.K. Warburton. Other versions: AAGK (§7.4), AAGX (§7.4), AAHI (§7.4), AANN (§7.4), ACKX (§7.4) — AAGZ 13 (1977) 371

INTHIST2 (Fortran, 729). A Fortran program to collect histograms over microscopic scalar interactions. E.D. von Meerwall — ABMX 13 (1977) 421

INTERACTIVE POSITRONFIT (Fortran, 1367). INTERACTIVE POSITRONFIT: a new version of a program for analysing positron lifetime spectra. C.J. Virtue, R.J. Douglas, B.T.A. McKee. Other versions: AAGK (§7.4), AAGX (§7.4), AAGZ (§7.4), AANN (§7.4), ACKX (§7.4) — AAHI 15 (1978) 97

SUSCEPT2 (Fortran, 747). A Fortran program for routine analysis of magnetic susceptibility data. E.D. von Meerwall — ABNA 15 (1978) 237

FYPAR (Fortran, 504). II. A computer program for calculation of parameters necessary for the computation of reliable pair distribution functions of non-crystalline materials from limited diffraction data. F.Y. Hansen. Subroutines required: ACYR (§7.6), ACYT (§7.4) — ACYS 15 (1978) 417

PAR (Fortran, 134). III. A computer program for calculation of reliable pair distribution functions of non-crystalline materials from limited diffraction data. F.Y. Hansen. Subroutines required: ACYR (§7.6), ACYS (§7.4) — ACYT 15 (1978) 431

PATFIT (Fortran, 5599). Program system for analysing positron lifetime spectra and angular correlation curves. P. Kirkegaard, M. Eldrup, O.E. Mogensen, N.J. Pedersen. Other versions: AAGK (§7.4), AAGX (§7.4), AAGZ (§7.4), AAHI (§7.4), ACKX (§7.4) — AANN 23 (1981) 307

GB1, GB2, GB3 (Fortran, 1344). A programming package for the study of high angle grain boundaries by using TEM. G.L. Bleris, Th. Karakostas, P. Delavignette — AAOS 28 (1983) 287

PFPOSFIT (Fortran, 3304). PFPOSFIT: a new version of a program for analysing positron lifetime spectra with non-Gaussian prompt curve. W. Puff. Other versions: AAGK (§7.4), AAGX (§7.4), AAGZ (§7.4), AAHI (§7.4), AANN (§7.4) — ACKX 30 (1983) 359

T12FIT (Fortran, 1120). A Fortran program for reduction of NMR relaxation data. E.D. von Meerwall, D. Thompson — ACFT 31 (1984) 385

ATSCAT (Fortran, 2800). Calculation of low energy atomic diffraction (LEAD) intensities. R.J. Blake — ACCX 33 (1984) 425

XFIT (Fortran, 1688). XFIT: a package for simulating and fitting X-ray powder diffraction patterns. A. Martorana, R. Gerbasi, A. Marigo, R. Zannetti. Subroutines required: ABCH (§4.9), ACWH (§4.9) — ACKY 34 (1984) 145

DIANA88 (Fortran, 5061, Manual 17 pages). Quasi-elastic X-ray scattering divergence analysis calculation. J.S. Reid, G.J. Milne — ABJK 55 (1989) 91

7.5. Mössbauer spectra

See §17.3, Nuclear physics, Mössbauer spectra

7.6. Neutron scattering

Other version: AAFR (§7.6) — ACIC 7 (1974) 289

RESTOR 1 (Fortran, 246). Computation of phonon spectrum from the cold neutron incoherent inelastic scattering by a polycrystal. T.D. Sokolovskij, L.A. Rogoschenko — ACXT 13 (1977) 381

FYCOOR (Fortran, 1694). I. A computer program for generation of a complete set of coordinates and force matrices for normal mode calculations of crystals and molecules. F.Y. Hansen. Subroutines required: ACXR (§7.6), ACXS (§7.6) — ACXQ 14 (1978) 193

000A CORRECTION 28/11/77 (Fortran). Unpublished correction

FYFRE (Fortran, 1363). II. A program for computing normal modes of molecules, crystal phonon dispersion relations and structure factors for neutron inelastic scattering. F.Y. Hansen. Subroutines required: ACXQ (§7.6), ACXS (§7.6) — ACXR 14 (1978) 219

000A CORRECTION 22/12/78 (Fortran) — 17 (1979) 423

FYADJ (Fortran, 1219). III. A force constant adjuster program to obtain a least squares fit to observed frequencies of molecules and crystals. F.Y. Hansen. Subroutines required: ACXQ (§7.6), ACXR (§7.6) — ACXS 14 (1978) 245

000A CORRECTION 28/11/77 (Fortran). Unpublished correction

FYINT (Fortran, 1106). I. A computer program for normalization and instrument correction of neutron diffraction data on non-crystalline materials to obtain the static structure factor. F.Y. Hansen. Subroutines required: ACYS (§7.6), ACYT (§7.6) — ACYR 15 (1978) 401

FYPAR (Fortran, 504). II. A computer program for calculation of parameters necessary for the computation of reliable pair distribution functions of non-crystalline materials from limited diffraction data. F.Y. Hansen. Subroutines required: ACYR (§7.6), ACYT (§7.6) — ACYS 15 (1978) 417

PAR (Fortran, 134). III. A computer program for calculation of reliable pair distribution functions of non-crystalline materials from limited diffraction data. F.Y. Hansen. Subroutines required: ACYR (§7.6), ACYS (§7.6) — ACYT 15 (1978) 431

MSCAT85 (Fortran, 7604). Improved Monte Carlo calculation of multiple scattering effects in thermal neutron scattering experiments. J.R.D. Copley, P. Verkerk, A.A. van Well, H. Fredrikze. Other version: ACIC (§7.6) — AAFR 40 (1986) 337

Condensed matter and surface science *(continued)*

7.7. Other condensed matter inc. simulation of liquids and solids

GINZBURG-LANDAU-FLUXOIDS (Algol, 235). Ginzburg-Landau fluxoids. See erratum Comput. Phys. Commun. 1 (1970) 291. U. Kammerer — ACKA 1 (1969) 10

SYMMETRIC NEEL WALLS (Algol, 424). Symmetric Neel walls in thin magnetic films. A. Hubert — ACKB 1 (1970) 343

0001 INTERNAL IMPROVEMENTS (Algol, 78). Symmetric Neel walls in thin magnetic films. An adaptation to increase the range of convergence. A. Hubert — 1 (1970) 468

TSP (Fortran, 497). Simulation of thermally stimulated dipolar processes in dielectrics. A. Linkens, J. Vanderschueren, P. Parot, J. Gasiot — ACKP 13 (1977) 411

000A CORRECTION 22/12/77 (Fortran). Unpublished correction

USSI (Fortran, 792). Simulation of ultrasonic degradation of macromolecules in solution. A. Linkens, J. Niezette, J. Vanderschueren — ACYN 15 (1978) 375

MDATOM (Fortran, 1116). Programs for the molecular dynamics simulation of liquids: I. Spherical molecules with short-ranged interactions. D. Fincham — ABVO 21 (1980) 247

MDIONS (Fortran, 1826). Programs for the dynamic simulation of liquids and solids. II. MDIONS: rigid ions using the Ewald sum. N. Anastasiou, D. Fincham. Other version: AARN (§7.7) — AARM 25 (1982) 159

000A CORRECTION 09/09/82 (Fortran) — 28 (1983) 323

MDIONS (VECTORISED) (Fortran, 1530). Programs for the dynamic simulation of liquids and solids. II. MDIONS: rigid ions using the Ewald sum (vectorised version on the CRAY-1). D. Fincham. Other version: AARM (§7.7) — AARN 25 (1982) 177

000A CORRECTION 09/09/82 (Fortran) — 28 (1983) 323

RECLIB (Fortran, 1999). The recursion method: processing the continued fraction. C.M.M. Nex — ACDL 34 (1984) 101

DUMBELL (Fortran, 983). DUMBELL: a program to calculate the structure and thermodynamics of a classical fluid of hard, homonuclear diatomic molecules. F. Lado — AADS 39 (1986) 133

MICROIS (Fortran, 442). Fortran code for the three-dimensional Ising model. M. Creutz, K.J.M. Moriarty. Other version: AALU (§7.7) — AADW 39 (1986) 173

ISING (Fortran, 349). Vectorization of the three-dimensional Ising model program on the CDC CYBER 205. M. Creutz, K.J.M. Moriarty, M. O'Brien. Other version: AADW (§7.7) — AALU 42 (1986) 191

MCMOLDYN/H2O (Fortran, 4625). Computer simulation package for liquids and solids with polar interactions. I. MCMOLDYN/H2O: aqueous systems. A. Laaksonen — AALR 42 (1986) 271

VX (Fortran, 11325). A vector code for the numerical simulation of cosmic strings and flux vortices in superconductors on the ETA-10. K.J.M. Moriarty, E. Myers, C. Rebbi — ABJD 54 (1989) 273

MDPYRS1 (Fortran, 4021). Molecular dynamics simulation program of order N for condensed matter. I. MDPYRS1: scalar pyramid, short-range interactions. Z.A. Rycerz, P.W.M. Jacobs — ABRW 60 (1990) 53

7.8. Structure and lattice dynamics

NA CL MADELUNG FIELD (Fortran, 267). The Madelung potential and electric field intensity for a sodium chloride and for a caesium chloride lattice. U. Opik, R.F. Wood — ACMA 1 (1970) 281

CS CL MADELUNG FIELD (Fortran, 299). The Madelung potential and electric field intensity for a sodium chloride and for a caesium chloride lattice. U. Opik, R.F. Wood — ACMB 1 (1970) 282

Other version: ACMM (§7.8) — ACMI 3 (1972) 88

GROUP THEORY LATTICE DYNAMICS 2 (Fortran, 2334). Improved version of group-theoretical analysis of lattice dynamics. J.L. Warren, T.G. Worlton. Other version: ACMI (§7.8) — ACMM 8 (1974) 71

SPACE GROUP REPRESENTATIONS (Fortran, 2128). Numerical calculations of the irreducible representations of space groups. N. Neto — ACUA 9 (1975) 231

NORMAL COORDINATE ANALYSIS (Fortran, 1325). Normal coordinate analysis of crystals. J.Th.M. de Hosson — ACKJ 10 (1975) 104

KCOUL1 (Algol, 936). Coulomb coefficients for complex ionic crystals. D.C. Sutherland, W.G. Ferrier — ACWY 12 (1976) 179

Other version: ACMU (§7.8) — ACMO 13 (1977) 341

RESTOR 1 (Fortran, 246). Computation of phonon spectrum from the cold neutron incoherent inelastic scattering by a polycrystal. T.D. Sokolovskij, L.A. Rogoschenko — ACXT 13 (1977) 381

FYCOOR (Fortran, 1694). I. A computer program for generation of a complete set of coordinates and force matrices for normal mode calculations of crystals and molecules. F.Y. Hansen. Subroutines required: ACXR (§7.8), ACXS (§7.8) — ACXQ 14 (1978) 193

000A CORRECTION 28/11/77 (Fortran). Unpublished correction

FYFRE (Fortran, 1363). II. A program for computing normal modes of molecules, crystal phonon dispersion relations and structure factors for neutron inelastic scattering. F.Y. Hansen. Subroutines required: ACXQ (§7.8), ACXS (§7.8) ACXR 14 (1978) 219
000A CORRECTION 22/12/78 (Fortran) 17 (1979) 423
FYADJ (Fortran, 1219). III. A force constant adjuster program to obtain a least squares fit to observed frequencies of molecules and crystals. F.Y. Hansen. Subroutines required: ACXQ (§7.8), ACXR (§7.8) ACXS 14 (1978) 245
000A CORRECTION 28/11/77 (Fortran). Unpublished correction
LATTICE DYNAMICS OF ZINCBLENDE (Fortran, 1157). Lattice dynamics of zincblende structure compounds using deformation-dipole model and rigid ion model. K. Kunc, O.H. Nielsen ACMP 16 (1979) 181
LATTICE DYNAMICS – SHELL MODEL (Fortran, 601). Lattice dynamics of zincblende structure compounds II. Shell model. K. Kunc, O.H. Nielsen. Subroutine required: ACMP (§7.8) ACUC 17 (1979) 413
ADIABATIC BOND CHARGE MODEL (Fortran, 1437). Lattice dynamics of group IV semiconductors using an adiabatic bond charge model. O.H. Nielsen, W. Weber ACUD 18 (1979) 101
LATEN (Fortran, 3129). LATEN: a complete lattice energy program. H.D.B. Jenkins, K.F. Pratt. Other version: ACMO (§7.8) ACMU 21 (1980) 257
HEXALAT (Fortran, 445). Two subroutines for calculating lattice sums and the distortion field due to a point force in hexagonal systems. W. Maysenholder ACKQ 24 (1981) 89
LATTICE DYNAMICS OF ZINCBLENDE (Fortran, 269). Lattice dynamics of zincblende structure compounds using a deformable ion model. O.H. Nielsen, S.S. Jaswal. Subroutine required: ACMP (§7.8) ACUG 25 (1982) 269
ACOUSTIC PHONON ANISOTROPY (Fortran, 1073). Acoustic phonon anisotropy: phonon focusing. G.A. Northrop AAOJ 28 (1982) 103
NPHZB84 (Fortran, 2824). Multiphonon X-ray scattering. J.S. Reid AADC 38 (1985) 43
SPHZB86 (Fortran, 1464). Single-phonon X-ray scattering. J.S. Reid AALZ 42 (1986) 417
CAROLINA (Fortran, 436). Low temperature Gruneisen parameter of cubic ionic crystals. A. Batana, M.C. Monard, M.R. Soriano AATG 43 (1987) 399
KAPPA,KP (Fortran, 1159). High temperature expansion via Schwinger-Dyson equations: the planar rotator model on a triangular lattice. P. Butera, R. Cabassi, M. Comi, G. Marchesini AATS 44 (1987) 143
DWB87 (Fortran, 2880). Harmonic Debye-Waller factors for cubic materials. J.S. Reid AATZ 46 (1987) 141

7.9. Transport properties

MUKUL (Fortran, 118). A routine for calculating the form-factor and the electrical resistivity of liquid N.F.E. metals. Md.M. Islam ACKC 5 (1973) 299
ELECTROTRANSPORT SIMULATION (Fortran, 186). Simulation of chemical profiles during electrotransport. D.L. Olson, J.L. Blough, T.S. Lakshmanan, D.A. Rigney ACIA 5 (1973) 430
AVA (Fortran, 310). A program for calculating the structure factors of liquid metals and binary liquid alloys. Md.M. Islam ACKT 23 (1981) 43

7.10. Collisions in solids

TRIDYN (VERSION 3.1) (Fortran, 1661). TRIDYN: binary collision simulation of atomic collisions and dynamic composition changes in solids. W. Moller, W. Eckstein, J.P. Biersack ABFH 51 (1988) 355

8. Crystallography

STLPLT (Fortran, 913). STLPLT-CALCOMP plot of crystallographic projections of Laue photographs. M. Canut-Amoros AASA 1 (1970) 293
FIREFLY II (Fortran, 2669). A program for the calculation of X-ray reflection intensities. I.F. Ferguson, J.E. Kirwan. Other version: AAQC (§8) AAQB 5 (1973) 328
FIREFLY IV (Fortran, 4557). A program for the calculation of X-ray reflection intensities, Part 2. I.F. Ferguson. Subroutine required: AAQB (§8). Other version: AAQB (§8) AAQC 10 (1973) 42
XRAY2 (Fortran, 618). A simple FORTRAN program to interpret cubic X-ray powder diffraction data. E.D. von Meerwall ABMT 11 (1976) 331
FIREBIRD 2 (Fortran, 4072). A program for the calculation of the positions of X-ray powder reflections. I.F. Ferguson, R.S. Fox, T.E. Hughes AAQD 12 (1976) 305
CORECTEX (Fortran, 1762). Slit height smearing correction in small angle X-ray scattering I: intensity correction program. M. Deutsch. Subroutine required (for data): AASC (§8) AASB 17 (1979) 337

Crystallography *(continued)*

0001 CORECTSP (Fortran, 114). Slit height smearing correction in small angle X-ray scattering III: intensity correction program adaptation to arbitrary slit transmission function. M. Deutsch. Subroutine required (for data): AASD (§8) 18 (1979) 143
FFITEX (Fortran, 552). Slit height smearing correction in small angle X-ray scattering II: computation of the correction function. M. Deutsch AASC 17 (1979) 345
GTSPLINE (Fortran, 1496). Slit height smearing correction in small angle X-ray scattering IV: computation of the correction function for an arbitrary slit transmission function. M. Deutsch AASD 18 (1979) 149
PLOMAC (Fortran, 3099). Plot program for Laue patterns and stereographic projections. E. Preuss AAQE 18 (1979) 261
COL (Fortran, 358). Calculation of crystal orientations using Laue patterns. E. Preuss. Subroutine required (for data): AAQE (§8) AAQF 18 (1979) 277
POWDER (Fortran, 832). Simulation of EPR-spectra of randomly oriented samples. See erratum Comput. Phys. Commun. 28 (1982) 217. C. Daul, C.W. Schlapfer, B. Mohos, J. Ammeter, E. Gamp ABVG 21 (1981) 385
Other version: ACKW (§8) ABVT 22 (1981) 13
PROVA (Fortran, 718). PROVA: a program for the calculation of X-ray powder spectra (ordered and disordered structures). A. Martorana, R. Zannetti, A. Marigo, D. Ajo, V. Malta AASE 27 (1982) 49
SIMULAPO (Fortran, 683). Simulation of powder EPR spectra with axial symmetry. R.S. de Biasi, J.A.M. Mendonca AAOF 28 (1982) 69
PLATTSUM2 (Fortran, 1557). A modification to PLATTSUM, a program that evaluates electrostatic lattice sums by the planewise summation method. J.A. Hernando, V. Massidda. Other version: ABVT (§8) ACKW 30 (1983) 403
FIREFLY VI (FIRECOMET) (Fortran, 7865). A program for the calculation of the intensities of X-ray or neutron powder reflections, Part 3. I.F. Ferguson, A.D. Hardy, M.U. Modi, A.H. Rogerson. Subroutines required: AAQB (§8), AAQC (§8) ACFX 32 (1984) 83
FIRESTAR (Fortran, 3269). A program for the derivation of crystal unit cell parameters from X-ray powder diffraction measurements. I.F. Ferguson, A.H. Rogerson ACFY 32 (1984) 95
NPHZB84 (Fortran, 2824). Multiphonon X-ray scattering. J.S. Reid AADC 38 (1985) 43
ORIENT (Fortran, 1883). Simulation of molecular reorientation in crystals. J.C.A. Boeyens, D.C. Levendis AADZ 39 (1986) 221
SPHZB86 (Fortran, 1464). Single-phonon X-ray scattering. J.S. Reid AALZ 42 (1986) 417
MORANG (Fortran, 1355). MORANG: a computer program designed to aid in the determinations of crystal morphology. R. Docherty, K.J. Roberts, E. Dowty ABFA 51 (1988) 423
XRLINE (Fortran, 1374). XRLINE, a program to evaluate the crystallite size of supported metal catalysts by single X-ray profile Fourier analysis. N. Aldea, E. Indrea. Subroutine required: ABDF (§7.2) ABLL 60 (1990) 155
PROPLT (Fortran, 5348). A three-dimensional protein graphic program. D.R. Lu, K. Park ABTB 60 (1990) 257

9. Data bases, data compilation & information retrieval

DIRAC (Fortran, 9320). Dynamic information retrieval of atomic codes II. Implementation. A.R. Davies, K. Smith, K.L. Kwok. Subroutine required (for data): AAIC (§9) AAIB 6 (1973) 165
DATBNK (Fortran, 7128). Dynamic information retrieval of atomic codes II. Implementation. A.R. Davies, K. Smith, K.L. Kwok AAIC 6 (1973) 166
DATSTOR (Fortran, 1511). Numerical modelling of a chemical plasma. III. DATSTOR: a program to create a database containing information on rate coefficients of chemical reactions. S.A. Roberts ACZF 18 (1979) 377
AMDS (Fortran, 2334). AMDS: a database system for atomic and molecular physics. J.G. Hughes, F.J. Smith ACCI 32 (1984) 317
HIONDAT (Fortran, 8263). Data base of cross sections and reaction rates for hydrogen ion sources. K. Smith, A.H. Glasser ABHF 54 (1989) 391
BBTREE (Fortran, 644). Balanced binary tree code for scientific applications. S.C. Park, J.P. Draayer ABJR 55 (1989) 189

10. Electrostatics and electromagnetics

AXISYMM-SCALAR-HELMHOLTZ-FINTEL4 (Fortran, 3638). A finite element program package for axisymmetric scalar field problems. A. Konrad, P. Silvester. Subroutine required: ACSD (§10). Other version: ACSC (§10) ACSB 5 (1973) 437
AXISYMM-SCALAR-HELMHOLTZ-FINTEL6 (Fortran, 4188). A finite element program package for axisymmetric scalar field problems. A. Konrad, P. Silvester. Subroutine required: ACSD (§10). Other version: ACSB (§10) ACSC 5 (1973) 438

Electrostatics and electromagnetics *(continued)*

GENERATE (Fortran, 760). A finite element program package for axisymmetric scalar field problems. A. Konrad, P. Silvester. Other version: AABL (§12) ACSD 5 (1973) 438

AXISYMM-VECTOR-HELMHOLTZ-FINTEL6 (Fortran, 4463). A finite element program package for axisymmetric vector field problems. A. Konrad, P. Silvester. Subroutines required: ACSC (§10), ACSD (§10), ACSF (§10) ACSE 9 (1975) 193

VECTR-FINTEL6-BLK-DATA-GENERATOR (Fortran, 1629). A finite element program package for axisymmetric vector field problems. A. Konrad, P. Silvester ACSF 9 (1975) 194

MAGNETSUITE (Fortran, 3050). Computing a Laplacian field component from boundary observations only. M.J. O'Connell ABCM 11 (1976) 221

LINEAR ACCELERATOR CAVITY CODE (Fortran, 6193). A linear accelerator cavity code based on the finite element method. A. Konrad. Subroutine required: ACSF (§10) ACSK 13 (1977) 349

Other version: ACKW (§10) ABVT 22 (1981) 13

PLATTSUM2 (Fortran, 1557). A modification to PLATTSUM, a program that evaluates electrostatic lattice sums by the planewise summation method. J.A. Hernando, V. Massidda. Other version: ABVT (§10) ACKW 30 (1983) 403

POT4A (Fortran, 4808). POT4A: a program for the direct solution of Poisson's equation in complex geometries. S.J. Beard, R.W. Hockney. Subroutines required: ABUF (§4.14) or ABUJ (§4.14) or ABUK (§4.14), ABUA (§4.6) ACDB 36 (1985) 25

MAXENTWDF (Fortran, 3660). MAXENTWDF: a computer program for the maximum entropy estimation of a wave distribution function. C. Delannoy, F. Lefeuvre AAFV 40 (1986) 389

VCSUM (Fortran, 430). Program to calculate the spectral harmonic expansion coefficients of the two scalar fields product. Z. Martinec. Subroutine required: AAPE (§4.11) ABHK 54 (1989) 177

CAROT VERSION 3.0 (Pascal, Screen, 10762, Manual 64 pages). An interactive computer-graphics-based processor for boundary element modelling of electromagnetic scattering by thin conducting wires. D.J.J. Van Rensburg, D.A. McNamara ABJL 55 (1989) 457

ASBOR (Fortran, 4207). A boundary element program package for electromagnetic excitation of conducting bodies of revolution by an asymmetrical slot. D.B. Davidson, D.A. McNamara ABLD 56 (1989) 249

SCTWO (Fortran, 1028). The Fortran code for the scattering of EM plane waves by two cylinders at normal incidence. H.A. Yousif, S. Kohler ABRI 59 (1990) 371

JELLYRPA (Fortran, 485). An RPA program for jellium spheres. G. Bertsch ABTC 60 (1990) 247

11. Elementary particle physics

11.1. General, high energy physics and computing

SPROC (Fortran, 6626). A preprocessor for Fortran source code produced by REDUCE. T. Kaneko, S. Kawabata ABLB 55 (1989) 141

GRAAL (Common Lisp, 1946). Symbolic superalgebra manipulations using Common Lisp. R. Cecchini, M. Tarlini ABRY 60 (1990) 265

11.2. Phase space and event simulation

GENIS (Fortran, 400). A Monte Carlo generation method with importance sampling for high energy collisions of hadrons. W. Kittel, L. Van Hove, W. Wojcik AAUA 1 (1970) 425

RN (Fortran, 300). The evaluation of the volume of the phase space of n particles. K. Kajantie, V. Karimaki AAUB 2 (1971) 207

GAT (Fortran, 4516). A program for the generation of artificial bubble chamber events. J. Bettels, P. Dodd AAUC 3 (1972) 136

PERIPHERAL PHASE SPACE INTEGRAL (Fortran, 1078). Recursive numerical integration of multi-particle phase space with peripheral matrix element. P. Pirila, E. Byckling AAUD 4 (1972) 117

LIMS (Algol, 187). Approximation formula and ALGOL program of the Lorentz-invariant momentum-space integral for particles of equal masses. A. Jabs AAUE 5 (1973) 217

GENRAP (Fortran, 300). Rapidity generator for Monte-Carlo calculations of cylindrical phase space. S. Jadach AAUO 9 (1975) 297

MCN (Fortran, 549). Monte Carlo integration program for the n-particle relativistic phase space integral in invariant variables. R.A. Morrow AAWB 13 (1977) 399

MULTJ (Fortran, 1923). A Monte Carlo program for QCD event simulation in electron-positron annihilation at LEP energies. R. Odorico AAVF 24 (1981) 73

Other version: AAFP (§11.2) AAVJ 27 (1982) 243

Other versions: AAFP (§11.2), AATJ (§11.2) AAVM 28 (1983) 229

Elementary particle physics — *Phase space and event simulation (continued)*

Other version: ACDN (§11.2) ACCB 31 (1984) 323
BAMJET (Fortran, 959). Monte Carlo code BAMJET to simulate the fragmentation of quark and diquark jets. S. Ritter. Subroutine required: ACFS (§11.2) ACFQ 31 (1984) 393
PARJET (Fortran, 1501). Monte Carlo code PARJET to simulate e+e–annihilation events via QCD jets. S. Ritter. Subroutines required: ACFQ (§11.2), ACFS (§11.2) ACFR 31 (1984) 401
DECAY (Fortran, 899). The Monte Carlo code DECAY to simulate the decay of baryon and meson resonances. K. Hanssgen, S. Ritter ACFS 31 (1984) 411
000A CORRECTION 03/07/87 (Fortran). Unpublished correction
COJETS (Fortran, 5138). COJETS: a Monte Carlo program simulating QCD in hadronic production of jets and heavy flavours with inclusion of initial QCD bremsstrahlung. R. Odorico AAVR 32 (1984) 139
000A CORRECTION 21/11/84 (Fortran) 34 (1985) 427
WIZJET (Fortran, 4964). WIZJET: a Monte Carlo program for hadronic production of W+- and Z0 simulating the standard model with inclusion of initial QCD bremsstrahlung. R. Odorico AAVS 32 (1984) 173
000A CORRECTION 21/11/84 (Fortran) 34 (1985) 427
Other versions: ACCB (§11.2), AAXF (§11.2) ACDN 34 (1985) 251
EPOS (Fortran, 3865). A Monte Carlo program for generating hadronic final states in electron-positron annihilations. L. Angelini, L. Nitti, M. Pellicoro, G. Preparata, G. Valenti ACDM 34 (1985) 371
KORAL-B (Fortran, 1364). Monte Carlo simulation of the process e+e- → tau+tau-, tau+- → X+- including radiative O(alpha**3) QED corrections, mass and spin effects. S. Jadach, Z. Was AABH 36 (1985) 191
BOPIT (Fortran). Coulomb plus strong interaction bound states -momentum space numerical solutions. D.P. Heddle, Yong Rae Kwon, F. Tabakin AADM 38 (1985) 71
0001 AUTOMATIC GRIDPOINT METHOD (Fortran, 2031). Adaptation of Coulomb plus strong interaction bound states – momentum space solutions: automatic gridpoint method. R.J. Luce, F. Tabakin 46 (1987) 193
HADRIN (Fortran, 2560). The Monte Carlo code HADRIN to simulate inelastic hadron-nucleon interactions at laboratory energies below 5 GeV. K. Hanssgen, J. Ranft. Subroutine required: ACFS (§11.2) AADN 39 (1986) 37
000A CORRECTION 05/05/87 (Fortran). Unpublished correction
NUCRIN (Fortran, 1650). The Monte Carlo code NUCRIN to simulate inelastic hadron-nucleus interactions at laboratory energies below 5 GeV. K. Hanssgen, J. Ranft. Subroutines required: AADN (§11.2), ACFS (§11.2) AADO 39 (1986) 53
MACPAR (Fortran, 1683). The macroparticle code MACPAR to simulate the beam-beam interaction of high energy linear electron-positron colliders. S. Ritter AADP 39 (1986) 71
Other versions: AAVM (§11.2), AATJ (§11.2) AAFP 39 (1986) 347
RADCOR (Fortran, 1754). Monte Carlo simulation of two-photon processes. I. Radiative corrections to multiperipheral e+e-mu+mu- production. F.A. Berends, P.H. Daverveldt, R. Kleiss AAFK 40 (1986) 271
DIAG36 (Fortran, 4332). Monte Carlo simulation of two-photon processes. II. Complete lowest order calculations for four-lepton production processes in electron-positron collisions. F.A. Berends, P.H. Daverveldt, R. Kleiss AAFH 40 (1986) 285
DIAG12NST (Fortran, 3071). Monte Carlo simulation of two-photon processes. III. Complete lowest order calculations for e+e- → e+e-mu+mu- with large angle tagging conditions. F.A. Berends, P.H. Daverveldt, R. Kleiss AAFJ 40 (1986) 309
RAMBO (Fortran, 237). A new Monte Carlo treatment of multiparticle phase space at high energies. R. Kleiss, W.J. Stirling, S.D. Ellis AAFU 40 (1986) 359
BASES/SPRING (Fortran, 2893). A new Monte Carlo event generator for high energy physics. S. Kawabata AAFW 41 (1986) 127
JETSET 6.3 (Fortran, 6173). The Lund Monte Carlo for jet fragmentation and e+e- physics: JETSET version 6.3 – an update. T. Sjostrand, M. Bengtsson. Other versions: AAVM (§11.2), AAFP (§11.2) AATJ 43 (1987) 367
FRITIOF VERSION 1.6 (Fortran, 1644). Interactions between hadrons and nuclei: the Lund Monte Carlo – FRITIOF version 1.6. B. Nilsson-Almqvist, E. Stenlund. Subroutine required: AAFP (§11.2) AATH 43 (1987) 387
PYTHIA 4.8 (Fortran, 6990). The Lund Monte Carlo for hadronic processes: PYTHIA version 4.8. H.-U. Bengtsson, T. Sjostrand. Subroutine required: AATJ (§11.2). Other version: ACDN (§11.2) AAXF 46 (1987) 43
TWISTER VERSION 1.2 (Fortran, 5023). TWISTER: a Monte Carlo for QCD high-p(transverse) scattering. G. Ingelman. Subroutine required: AAFP (§11.2) or AATJ (§11.2) AAXG 46 (1987) 217
LUCIFER VERSION 2.2 (Fortran, 3669). LUCIFER: a Monte Carlo for high-p(transverse) photoproduction. G. Ingelman, A. Weigend. Subroutine required: AAFP (§11.2) or AATJ (§11.2) AAXH 46 (1987) 241

JADJAD (Fortran, 1206). JADJAD: simulation of inelastic nucleus-nucleus interactions below 5GeV. H.N. Agakishiev, V.G. Grishin, K. Hanssgen, T. Kanarek, R.M. Mechtiev. Subroutines required: AADO (§11.2), AADN (§11.2), ACFS (§11.2) ABBK 48 (1988) 391

RABHAT (Fortran, 6281). Radiative Bhabha scattering in special configurations with missing final e+ and/or e-. K. Tobimatsu, Y. Shimizu ABLC 55 (1989) 337

GENEVE (Fortran, 1036). The Monte Carlo integration of cylindrical phase space with leading particles. V. Vrba ABLI 56 (1989) 165

YFS2.02 (Fortran, 2190). YFS2: the second order Monte Carlo for fermion pair production at LEP/SLC with the initial state radiation of two hard and multiple soft photons. S. Jadach, B.F.L. Ward ABLO 56 (1990) 351

CHANEL (Fortran, 1395). Numerical calculation of helicity amplitudes for processes involving massive fermions. H. Tanaka ABLT 58 (1990) 153

COJETS (Fortran, 40237, Manual 86 pages). COJETS 5.12: A Monte Carlo simulation program for antiproton-proton and proton-proton collisions. R. Odorico. Other version: AAVR (§11.2) ABRM 59 (1990) 527

11.3. Cascade and shower simulation

FLUKA (Fortran, 1975). Monte Carlo programs for calculating three-dimensional high-energy (50 MeV-500GeV) hadron cascades in matter. J. Ranft, J.T. Routti AAUH 7 (1974) 327

0001 TRANKA FOR DEEP PENETRATION (Fortran, 1296). Monte Carlo programs for calculating three-dimensional high-energy (50 MeV-500GeV) hadron cascades in matter. J. Ranft, J.T. Routti 7 (1974) 327

CASCADE (Fortran, 946). A program for the analytic simulation of extensive air showers. L. Goorevich AAYF 7 (1974) 344

EMCASR (Fortran, 730). A set of subroutines for simulation of electron-photon cascades. T. Stanev, Ch. Vankov AAUV 16 (1979) 363

000A CORRECTION 08/05/79 (Fortran). Unpublished correction

11.4. Quantum electrodynamics (see also Feynman diagrams, §4.4)

VIRT SPEC (Fortran, 1280). Calculation of the virtual photon spectrum in distorted wave analysis. L.E. Wright, C.W. Soto Vargas ABPJ 20 (1980) 337

0001 MICROCANONICAL DEMON (Fortran). Implementation of the microcanonical Monte Carlo simulation algorithm for SU(N) lattice gauge theory calculations. M. Creutz, K.J.M. Moriarty AAOT 30 (1983) 255

MUSTRAAL (Fortran, 944). Monte Carlo simulation of radiative corrections to the processes e+e- → mu+mu- and e+e- → q(bar)q in the Z0 region. F.A. Berends, R. Kleiss, S. Jadach ACEJ 29 (1983) 185

KORAL-B (Fortran, 1364). Monte Carlo simulation of the process e+e- → tau+tau-, tau+- → X+- including radiative O(alpha**3) QED corrections, mass and spin effects. S. Jadach, Z. Was AABH 36 (1985) 191

ZORAD (Fortran, 243). Programs to calculate multiple QED radiation in leptonic decays of the Z0 and W+- weak bosons. S. Laporta, R. Odorico AADQ 39 (1986) 127

WRAD (Fortran, 257). Programs to calculate multiple QED radiation in leptonic decays of the Z0 and W+- weak bosons. S. Laporta, R. Odorico AADR 39 (1986) 127

GRAND (Pascal, Fortran, 6664). Automatic generation of Feynman graphs and amplitudes in QED. T. Kaneko, S. Kawabata, Y. Shimizu AATD 43 (1987) 279

LUCIFER VERSION 2.2 (Fortran, 3669). LUCIFER: a Monte Carlo for high-p(transverse) photoproduction. G. Ingelman, A. Weigend. Subroutine required: AAFP (§11.2) or AATJ (§11.2) AAXH 46 (1987) 241

RABHAT (Fortran, 6281). Radiative Bhabha scattering in special configurations with missing final e+ and/or e-. K. Tobimatsu, Y. Shimizu ABLC 55 (1989) 337

SPINORP (Pascal, 3441). Calculation of QED graphs with spinor technique. H. Perlt, J. Ranft, J. Heinrich ABLN 56 (1990) 385

DIZET (Fortran, 2824). DIZET: electroweak one loop corrections for e++e− → f++f− around the Z0 peak. D.Yu. Bardin, M.S. Bilenky, T. Riemann, M. Sachwitz, H. Vogt, P.Ch. Christova ABRL 59 (1990) 303

11.5. Quantum chromodynamics, lattice gauge theory

U1LATTICE (Fortran, 430). Monte Carlo simulation of U(1) lattice gauge theory. R.C. Edgar, L. McCrossen, K.J.M. Moriarty ABEA 22 (1981) 433

SU2LGT (Fortran, 724). Monte Carlo simulation of SU(2) lattice gauge theory. R.W.B. Ardill, K.J.M. Moriarty AAQY 24 (1981) 127

LATTICE (Fortran, 694). Vectorizing the Monte Carlo algorithm for lattice gauge theory calculations on the CDC CYBER 205. D. Barkai, K.J.M. Moriarty AARH 25 (1982) 57

Elementary particle physics — *Quantum chromodynamics, lattice gauge theory (continued)*

HEVOL (Fortran, 2005). HEVOL: a Monte Carlo program to calculate the evolution of structure functions with the inclusion of heavy quark effects. R. Odorico AAVH 25 (1982) 253
LATGAUGEMC (Fortran, 393). A fast algorithm for Monte Carlo simulations of 4-d lattice gauge theories with finite groups. G. Bhanot, C.B. Lang, C. Rebbi AAVI 25 (1982) 275
MULTIQUARK (SCHOONSCHIP, 1043). Multiquark calculations with SCHOONSCHIP. J. Wroldsen AAVG 27 (1982) 39
HEVOL2 (Fortran, 2823). HEVOL2: a Monte Carlo program to calculate the evolution of structure functions with the inclusion of next to leading order effects. A. Sansoni AAVK 27 (1982) 403
SUUNFA (Fortran, 852). Monte Carlo simulation of pure U(N) and SU(N) lattice gauge theories with fundamental and adjoint couplings. R.W.B. Ardill, K.J.M. Moriarty, M. Creutz AAOT 29 (1983) 97
LATTICE (Fortran, 635). Efficient implementation of the Monte Carlo method for lattice gauge theory calculations on the Floating Point Systems FPS-164. K.J.M. Moriarty, J.E. Blackshaw ACEK 29 (1983) 155
LATTICE (Fortran, 802). Monte Carlo simulation of pure U(N) and SU(N) gauge theories on a simplicial lattice. J.-M. Drouffe, K.J.M. Moriarty, C.N. Mouhas ACFG 30 (1983) 249
LATT (Fortran, 1301). Wilson loops, string tension and correlations in Monte Carlo simulation of compact U(1) lattice gauge theory. M.J. Cole, K.J.M. Moriarty, P.E. Stolorz ACFJ 30 (1983) 421
BCH (Fortran, 952). Monte Carlo simulation of pure SU(2) gauge theory on a body-centered hypercubic lattice. W. Celmaster, K.J.M. Moriarty AABF 34 (1985) 415
SU3 (Fortran, 1968). Efficient multitasking of the SU(3) lattice gauge theory algorithm on the CRAY X-MP. D.W. Kuba, K.J.M. Moriarty AABT 36 (1985) 351
LINE, BESSEL AND TRANSLATE (Fortran, 891). A vectorized Monte Carlo algorithm for computing Wilson line observables in SU(2) gauge theory on a BCH lattice. W. Celmaster, F. Green, R. Gupta, E. Kovacs AABW 36 (1985) 409
SKY2, SKY3, SKY4 (Fortran, 985). Monte Carlo simulation of lattice Skyrme model. R. Saly AABZ 36 (1985) 417
SPINSU3 (Fortran, 4550). A vectorized code for the Monte Carlo computation of spin-dependent static potentials in QCD. M. Campostrini, K.J.M. Moriarty, C. Rebbi AALH 42 (1986) 175
TWISTER VERSION 1.2 (Fortran, 5023). TWISTER: a Monte Carlo for QCD high-p(transverse) scattering. G. Ingelman. Subroutine required: AAFP (§11.2) or AATJ (§11.2) AAXG 46 (1987) 217
PSEUDOF (Fortran, 2897). A vectorized code for the pseudofermion simulation of QCD with dynamical quarks. M. Campostrini, K.J.M. Moriarty, J. Potvin, C. Rebbi ABDH 50 (1988) 395
U3MAIN (Fortran, 1106). A fast CYBER 205 – ETA-10 program for SU(3) lattice gauge theory. C. Vohwinkel, B.A. Berg, A. Devoto ABDJ 51 (1988) 331
QUBIC (Fortran, 1232). A vectorized code for the computation of the topological charge in SU(2) lattice gauge theory. A.S. Kronfeld, M.L. Laursen, G. Schierholz, C. Schleiermacher, U.-J. Wiese ABHQ 54 (1989) 109
VX (Fortran, 11325). A vector code for the numerical simulation of cosmic strings and flux vortices in superconductors on the ETA-10. K.J.M. Moriarty, E. Myers, C. Rebbi ABJD 54 (1989) 273
FIVE PARTON CROSS SECTION (Reduce, Fortran, 2656). Cross section for five-parton production in e+e- annihilation. N.K. Falck, D. Graudenz, G. Kramer ABLH 56 (1989) 181
SUSYCAL (Pascal, 3463). SUSYCAL: symbolic computations in supersymmetric theories. T. Kreuzberger, W. Kummer, M. Schweda ABLW 58 (1990) 89
STRING (C, 9846). Computational aspects of simulating dynamically triangulated random surfaces. C.F. Baillie, D.A. Johnston, R.D. Williams ABLV 58 (1990) 105
STRONG_SU2 (Fortran, 4440). Generation and analysis of high order strong coupling series for SU(2) lattice gauge theory. C. Ayala, M. Baig ABLQ 58 (1990) 199
QCDPI (Fortran, 1281). QCD corrections to vector boson self-energies in the standard model. B.A. Kniehl ABRC 58 (1990) 293

11.6. Phenomenological and empirical models and theories

EFFECTIVE REGGE TRAJECTORIES (Fortran, 1381). Computation of effective Regge trajectories for high energy two-body reactions. D.J. Harrison, A.C. Irving, A.D. Martin ABCE 5 (1973) 153
EPWAAM (Fortran, 2583). An efficient partial-wave analyser for the absorption model. P.A. Collins, B.J. Hartley, R.W. Moore, K.J.M. Moriarty AAUF 5 (1973) 349
DEM (Fortran, 689). Monte Carlo simulation of the diffractive excitation model. J. Kasman ABCK 9 (1975) 182
ONCPLT (Fortran, 4020). A program for calculating the observables for single-particle-inclusive production reactions. K.J.M. Moriarty, J.H. Tabor. Subroutine required: AAUN (§14) AAUR 12 (1976) 277

Elementary particle physics — *Phenomenological and empirical models and theories (continued)*

0001 BACKWARD INCLUSIVE PROTONS (Fortran, 401). Program adaptation: to calculate inclusive backward proton production cross sections. K.J.M. Moriarty, H.N. Thompson. Subroutines required: AAUN (§14), AAUN0001 — 18 (1979) 155
SPALL (Fortran, 1247). Fortran program SPALL for computing spallation reaction cross sections. J.T. Routti, J.V. Sandberg — AAVE 23 (1981) 411
SOLITON (Fortran, 543). Soliton bag model. R. Saly — AAVQ 30 (1983) 411
REGGEON (Fortran, 479). Calculation of hadron elastic scattering amplitude from higher order Reggeon field theory. M. Baig, C. Bourrely — ACCG 32 (1984) 281
SKY2, SKY3, SKY4 (Fortran, 985). Monte Carlo simulation of lattice Skyrme model. R. Saly — AABZ 36 (1985) 417
BAG (Fortran, 1390). Soliton bag model. R. Horn, R. Goldflam, L. Wilets — AALD 42 (1986) 105
ROMPIN (Fortran, 11309). ROMPIN: a relativistic optical model program for pion-nucleus scattering. D.R. Giebink, D.J. Ernst — ABBP 48 (1988) 407

11.7. Detector design and simulation

EBEGA (Fortran, 1513). EBEGA: the counting efficiency of a beta-gamma emitter in liquid scintillators. E. Garcia-Torano, A. Grau Malonda, J.M. Los Arcos — ABDK 50 (1988) 313
TRD_SIM (Fortran, 3555). A Monte Carlo program to design a transition radiation detector. M. Castellano, C. Favuzzi, N. Giglietto, E. Nappi, P. Spinelli — ABDI 51 (1988) 431

11.8. Detector control and data acquisition

MENU-EMU, VERSION LUND/10/88 (Pascal, 4778, Manual 37 pages). Measurement and three dimensional reconstruction of particle tracks in emulsion chambers. S. Persson — ABJI 55 (1989) 103

11.9. Event reconstruction and data analysis (except data bases)

EXCAMP (Fortran, 3980). A program for fitting and plotting amplitudes, polarization and differential cross section data for two-body reactions. R.W.B. Ardill, K.J.M. Moriarty, P. Koehler. Subroutines required: ACWH (§4.9), AAUN (§14), AAUN0001 — ABVW 22 (1981) 419
RESON (Fortran, 4605). RESON: a program for the detection and fitting of Breit-Wigner resonances. J. Tennyson, C.J. Noble — ACCW 33 (1984) 421
JETS (Fortran, 35218). JETS: a program for jet analysis of high-energy collision events. M. Galli — ACCS 34 (1984) 135
KNN (Fortran, 487). Statistical decisions under nonparametric a priori information. A.A. Chilingarian — ABHS 54 (1989) 381
VERT VER. 3.1, EMUFIT VER. 4.1 (Fortran, 7444). A track reconstruction program (TRP) for evaluation of nucleus-nucleus collisions in nuclear track emulsion chambers. E. Ganssauge, B. Dressel, S. Hackel, H. Kallies, E. Koch, Ch. Muller, J.T. Rhee, W. Schulz, K. Standecke — ABFU 55 (1989) 233

11.10. Accelerators and particle beams

TAYLOR-CHIRIKOV MAP PACKAGE (Fortran, 1260). Taylor-Chirikov map package: a package of programs for the calculation of ordered periodic orbits of area preserving twist maps. Q. Chen, B.D. Mestel — ABBW 51 (1988) 463

11.11. Data structures and data base systems

No programs classified under this heading yet.

12. Gases and fluids

TRANSPORT COLLISION INTEGRALS (Fortran, 1750). Transport collision integrals for a dilute gas. H. O'Hara, F.J. Smith — ACQN 2 (1971) 47
000A CORRECTION 10/03/71 (Fortran) — 2 (1971) 173
0001 ACQN ADAPTED FOR IBM 360/75 (Fortran, 412). Program ACQN to calculate transport collision integrals adapted to run on IBM computers. P.D. Neufeld, R.A. Aziz — 3 (1972) 269
A00A CORRECTION TO 0001 31/01/80 (Fortran) — 19 (1980) 271
0002 ACQN FOR MINICOMPUTERS (Fortran, 298). Adaptation of the ACQN program to calculate transport collision integrals on minicomputers. G. Hegyi, L. Barbu, L. Jakab — 34 (1984) 219

Gases and fluids *(continued)*

SOUND ABSORPTION (Fortran, 320). A program for the extraction of bulk viscosities from sound absorption data. H. Moraal — ABSA 3 (1972) 1
EOSEXP (Fortran, 424). An expansion equation of state subroutine. K. Morgan — ACSA 5 (1973) 64
000A CORRECTION 21/09/79 (Fortran) — 19 (1980) 395
ELECTRON ENERGY LOSS (Fortran, 2223). Electron energy deposition in a gaseous mixture. L.R. Peterson, T. Sawada, J.N. Bass, A.E.S. Green — ACRH 5 (1973) 239
GAS MIXTURE TRANSPORT PROPERTIES (Fortran, 1148). Transport properties of dilute gas mixtures. R.M. Thomson — ACZO 18 (1979) 123
NOMAD (Fortran, 1438). Numerical solutions of the Boltzmann transport equation. S.D. Rockwood, A.E. Greene — ABVC 19 (1980) 377
BOREAS (Fortran, 6618). BOREAS: a program for 1-D ideal fluid dynamics with shocks. D. Odstrcil. Subroutines required: ABUF (§4.14) or ABUJ (§4.14) or ABUK (§4.14), ABUH (§4.14), ABUI (§4.14) — ACFK 31 (1984) 13
FORMINT (PL/1-FORMAC, 342). FORMINT: a program for the classification of integrable nonlinear evolution equations. V.P. Gerdt, A.B. Shvachka, A.Yu. Zharkov — ACDJ 34 (1985) 303
BLOCDAT (Fortran, 4600). BLOCK DATA subprograms for finite element program packages. L. Flach, D.A. McNamara. Other version: ACSD (§10) — AABL 36 (1985) 223
DUMBELL (Fortran, 983). DUMBELL: a program to calculate the structure and thermodynamics of a classical fluid of hard, homonuclear diatomic molecules. F. Lado — AADS 39 (1986) 133
DECOMP (Fortran, 219). DECOMP: computational package for nitrogen transport modelling in tissues. B.R. Wienke — AAFO 40 (1986) 327
TDPOIS (Fortran, 931). TDPOIS, a vector-processor routine for the solution of the three-dimensional Poisson and biharmonic equations in a rectangular prism. G.A. Houseman — AATC 43 (1987) 257
GABI (Basic, 692). Thermally induced refractive index gradients in a dye-laser cell. Z. Burshtein, D. Levron, G. Bialolenker — ABFQ 51 (1988) 349
KINPACK (Fortran, 1549). Computer programs for the Boltzmann collision matrix elements. P. Das — ABJS 55 (1989) 177
2D-FROTH (Fortran, 8186). 2D-FROTH, a program for the investigation of 2-dimensional froths. J.P. Kermode, D. Weaire — ABRX 60 (1990) 75

13. Geophysics

SHELL (Fortran, 432). Direct computation of the magnetic shell parameter. G. Kluge — AAEA 3 (1972) 31
INTEL (Fortran, 518). Numerical fits for the geomagnetic shell parameter. G. Kluge, K.G. Lenhart. Subroutine required: AAEA (§13) — AAEB 3 (1972) 36
MAGNES (Fortran, 218). Geomagnetic field models: scalar and vector potential, induction vector and its gradient tensor computed by a common algorithm. G. Kluge — AAEC 4 (1972) 347
H-PARALLEL FEMT-2D (Fortran, 4199). A finite element program package for magnetotelluric modelling. E. Kisak, P. Silvester. Subroutine required: ACSJ (§13) — ACSG 10 (1976) 421
E-PARALLEL FEMT-2D (Fortran, 6357). A finite element program package for magnetotelluric modelling. E. Kisak, P. Silvester. Subroutine required: ACSJ (§13) — ACSH 10 (1976) 421
ZFORMATS (Fortran, 585). A finite element program package for magnetotelluric modelling. E. Kisak, P. Silvester — ACSJ 10 (1976) 421
ELSGAU (Fortran, 354). Numerical evaluation of geomagnetic dynamo integrals (Elsasser and Adams-Gaunt integrals). W. Moon — ACYX 16 (1979) 267
0001 ADDITION OF FUNCTION DJSQ (Fortran, 271). J-square. W. Moon — 22 (1981) 97
HYDELP (Fortran. 557). Algorithm for the first order hydrostatic ellipticity of a planet. W. Moon — ACZT 19 (1980) 63
TAUP (Fortran, 3309). Algorithm for the creation of the P-Tau and P-X planes from T-X plane data. A. Carswell, W. Moon — ACCA 32 (1984) 185
CENTER (Fortran, 5658). CENTER: a software package for center estimation. S.B. Hooker, J.W. Brown. Subroutine required: AADI (§4.14) — AADH 38 (1985) 421
MAXENTWDF (Fortran, 3660). MAXENTWDF: a computer program for the maximum entropy estimation of a wave distribution function. C. Delannoy, F. Lefeuvre — AAFV 40 (1986) 389
DMO (Fortran, 4175). Dip moveout by Fourier transform. M.H. Serzu, W.M. Moon — ABHH 52 (1989) 337

14. Graphics

Other version: ABOO (§14)	ABOI	2 (1971)	55
PLOTT NEW VERSION (Fortran, 509). A new version of a printer-plotter routine. C.F. Moore. Other version: ABOI (§14)	ABOO	2 (1971)	470
APLOT (Fortran, 1261). A plotting package for visual comparison of points and curves. J. Anderson, K.J.M. Moriarty, R.C. Beckwith	AAUN	9 (1975)	85
0001 POLAR PLOT AND IMPROVEMENTS (Fortran, 1102). A plotting package for visually comparing theoretical and experimental results. J. Anderson, R.C. Beckwith, K.J.M. Moriarty, J.H. Tabor		15 (1978)	437
A00A CORRECTION TO 0001 04/02/80 (Fortran)		19 (1980)	272
A00B CORRECTION TO 0001 28/06/83 (Fortran)		30 (1983)	219
TDPLOT3 (Fortran, 2814). A program for perspective views of three-dimensional surfaces. E.A. Olszewski, W.J. Thompson	ABVL	21 (1980)	185
000A CORRECTION 07/04/81 (Fortran)		23 (1981)	221
PHOTO SIMULATION (Fortran, 397). Simulation of photographic images on a plotter. B.V. Robouch, A. Sestero, S. Podda	AAQG	24 (1981)	63
FERMI-SURFACE (Fortran, 2096). FERMI-SURFACE: a package to display perspective drawings of Fermi surfaces in cubic systems. P.C. Pattnaik, P.H. Dickinson, J.L. Fry	AARG	25 (1982)	63
RAMFLA (Fortran, 3416). Program for B-spline interpolation of surfaces with application to computer tomography. J.M.F. Chamayou	AARO	27 (1982)	187
TDPLOT3 (Fortran, 5493). A program for perspective views of open surfaces. E.A. Olszewski	ACFB	30 (1983)	259
KUBIK (Fortran, 5692). Automatic three-dimensional finite element mesh generation using the program KUBIK. See also Comput. Phys. Commun. 32 (1984) 267. S. Pissanetzky	AAVO	32 (1984)	245
INPOLY (Fortran, 169). Checking if a point lies inside a polygon. C. Wooff	AABJ	36 (1985)	219
TITEL (Fortran, 5113). TITEL: a letter generating program. M. Ramek	AABY	36 (1985)	433
PLO (Fortran, 886). A colloquial plotting package to realize scientific diagrams. R. Potenza, C. Tuve	AABQ	38 (1985)	53
FEYNMAN (LATEX, 1922, Manual 92 pages). A LaTeX graphics routine for drawing Feynman diagrams. M.J.S. Levine	ABLR	58 (1990)	181

15. Laser physics

MEDUSA (Fortran, 6316). MEDUSA – a one-dimensional laser fusion code. J.P. Christiansen, D.E.T.F. Ashby, K.V. Roberts. Subroutine required: ABUF (§4.14) or ABUJ (§4.14) or ABUK (§4.14)	ABUG	7 (1974)	271
000A CORRECTION 15/8/75 (Fortran)		10 (1975)	251
TLASER (Fortran, 1117). TLASER – a CO2 laser kinetics code. A.R. Davies, K. Smith, R.M. Thomson	ACWD	10 (1975)	117
0001 INJLOK (Fortran, 398). INJLOK: a CO2 laser injection locking code. A.R. Davies, K. Smith, R.M. Thomson		20 (1980)	413
RAMSES (Fortran, 3798). RAMSES: a two-dimensional, PIC type laser pulse propagation code. H.D. Dudder, D.B. Henderson. Subroutine required: ABUF (§4.14) or ABUJ (§4.14) or ABUK (§4.14)	ABUL	10 (1975)	155
BOLTZ (Fortran, 2857). BOLTZ: a code to solve the transport equation for electron distributions and then calculate transport coefficients and vibrational excitation rates in gases with applied fields. R.M. Thomson, K. Smith, A.R. Davies	ACWX	11 (1976)	369
PULSAMP (Fortran, 1256). PULSAMP: a program to predict the amplification of nano-second CO2 laser light pulses. S.A. Roberts, K. Smith	ACXC	12 (1976)	323
SUBMMW (Fortran, 833). SUBMMW: a theoretical model to predict CW sub-millimeter wave laser performance. K. Smith	ACYC	15 (1978)	85
CARS (Fortran, 749). CARS spectral profiles for homonuclear diatomic molecules. W.M. Shaub, S. Lemont, A.B. Harvey	AAHJ	16 (1978)	73
CASTOR 2 (Fortran, 13600). CASTOR 2: a two-dimensional laser target code. J.P. Christiansen, N.K. Winsor. Subroutines required: ABUF (§4.14) or ABUJ (§4.14) or ABUK (§4.14), ABUV (§19.1)	ABUY	17 (1979)	397
000A CORRECTION 10/03/81 (Fortran)		23 (1981)	109
REACS (Fortran, 923). Numerical modelling of a chemical plasma. I. REACS: a program to generate all reactions which take place in a plasma of given chemical content. S.A. Roberts. Subroutine required (for data): ACZF (§9)	ACZD	18 (1979)	353
PLASKEM (Fortran, 1789). Numerical modelling of a chemical plasma. II. PLASKEM: a program to predict the variation with time of the number densities of chemical species within a plasma. S.A. Roberts. Subroutines required (for data): ACWX (§15), ACZD (§15), ACZF (§9)	ACZE	18 (1979)	363

Laser physics *(continued)*

COLASE (Fortran, 2796). COLASE: a CO-N2-He laser kinetics code. S.A. Roberts ABVF 20 (1980) 373
HEATER (Fortran, 602). HEATER: a 2D laser propagation subroutine for underdense plasmas. J.N. McMullin, C.E. Capjack, C.R. James ABSG 23 (1981) 31
PROION (Fortran, 407). Proion: a code for calculating ionisation threshold intensities and ionisation periods in high-intensity-laser irradiated plasmas. B.W. Boreham AARY 27 (1982) 65
FIRE (Fortran, 6071). FIRE: a code for computing the response of an inertial confinement fusion cavity gas to a target explosion. T.J. McCarville, R.R. Peterson, G.A. Moses. Subroutine required (for data): AAHO (§15) AAHP 28 (1983) 367
MIXERG (Fortran, 2509). MIXERG: an equation of state and opacity computer code. R.R. Peterson, G.A. Moses AAHO 28 (1983) 405
HEIZ (Fortran, 316). HEIZ: a program to estimate temperature modifications in laser plasma interaction experiments by inverse bremsstrahlung absorption and classical heat conduction. B. Gellert, J. Handke ACES 30 (1983) 169
MF-FIRE (Fortran, 9545). MF-FIRE: a multifrequency radiative transfer hydrodynamics code. G.A. Moses, R.R. Peterson, T.J. McCarville. Subroutine required: AAHO (§15) ACDV 36 (1985) 249
SQSIMUL (Fortran, 1836). SQSIMUL: a Fortran code for the computation of squeezing properties and photon statistics in multiphoton processes. F.J. Bermejo, J. Santoro, L. Sainz de los Terreros AATE 43 (1987) 245
MULTI (Fortran, 2670). MULTI: a simulation program for laser processing of multilayer structures. C. Topacli, Y. Gunduc, A. Aydinli ABFR 52 (1988) 65

16. Molecular physics and physical chemistry

16.1. Structure and properties

Other version: AARD (§16.1) ACXN 14 (1978) 13
MBPT ORGANIZATION (Fortran, 1454). Diagrammatic many-body perturbation expansion for atoms and molecules: I. General organization. D.M. Silver. Subroutines required: ACXG (§16.1), ACXH (§16.1) ACXF 14 (1978) 71
MBPT LADDER DIAGRAMS (Fortran, 794). Diagrammatic many-body perturbation expansion for atoms and molecules: II. Second-order and third-order ladder energies. D.M. Silver. Subroutines required: ACXF (§16.1), ACXH (§16.1) ACXG 14 (1978) 81
MBPT RING DIAGRAMS (Fortran, 739). Diagrammatic many-body perturbation expansion for atoms and molecules: III. Third-order ring energies. S. Wilson. Subroutines required: ACXF (§16.1), ACXG (§16.1) ACXH 14 (1978) 91
IBMOL-7 (Fortran, 18476). A program to introduce local symmetry in ab initio computations of molecules: IBMOL-7. E. Ortoleva, G. Castiglione, E. Clementi ACYY 19 (1980) 337
PSEPOT (Fortran, 971). Pseudopotential matrix elements in the Gaussian basis. M. Kolar. Other version: AAQM (§16.1) AAQL 23 (1981) 275
PSEPO1 (Fortran, 958). Pseudopotential matrix elements in the Gaussian basis. M. Kolar. Subroutine required: AAQN (§16.1). Other version: AAQL (§16.1) AAQM 23 (1981) 275
COMPANGI (Fortran, 249). Pseudopotential matrix elements in the Gaussian basis. M. Kolar AAQN 23 (1981) 275
Other version: ABRA (§16.1) AAPD 24 (1981) 135
MSXALPHA/II (Fortran, 7052). A compact program of the SCF-Xalpha scattered wave method: Version II. S. Katsuki, M. Klobukowski, P. Palting. Subroutines required: ACQI (§2.1), ACQI0001. Other version: ACXN (§16.1) AARD 25 (1982) 39
AMYR (Fortran, 2198). Molecular associations. S. Fraga ACEO 29 (1983) 351
0001 AGAB (Fortran, 198). Association of proteins: adaptation and coupling of two available programs. L. Seijo, B. Coghlan, S. Fraga 41 (1986) 169
DIAB (Fortran, 801). Non-adiabatic transformation of quantum chemistry energy hypersurfaces. M.C. Bacchus-Montabonel, P. Vermeulin ABXA 30 (1983) 163
ASYMTOP (Fortran, 852). A program to generate the symmetry-adapted rotational eigenfunctions and energy levels for asymmetric top molecules. A. Jain, D.G. Thompson ACFD 30 (1983) 301
000A CORRECTION 18/10/84 (Fortran) 34 (1985) 427
DIAD (Fortran, 820). Determination of antigenic determinants. S. Fraga ACFH 30 (1983) 325
POETA (Fortran, 7746). Determination of proteinic structures: an experimentation program. B. Coghlan, S. Fraga AABU 36 (1985) 391

0001 AGAB (Fortran, 234). Association of proteins: adaptation and coupling of two available programs. L. Seijo, B. Coghlan, S. Fraga — 41 (1986) 169

IPPP (Fortran, 1218). IPPP: a program for the RPA calculation of transmission mechanisms of spin-spin coupling constants. A.R. Engelmann, M.A. Natiello, G.E. Scuseria, R.H. Contreras — AAFL 39 (1986) 409

LBEXP (Fortran, 1065). One-dimensional vibrational eigenvalue problem with numerical potentials. E. Yurtsever, M. Pehlivan — AAFN 39 (1986) 431

DIRIGE (Fortran, 1235). DIRIGE: a program for calculating eigenvalues and initial values of log derivative eigenfunctions for a diatomic molecule. M. Dagher, H. Kobeissi — AATT 46 (1987) 445

ARIADNE-88 (Fortran, 8671, Manual 10 pages). ARIADNE-88: an ab initio monoconfigurational closed and open shell direct electronic energy calculation using elementary Jacobi rotations. R. Carbo, B. Calabuig — ABHG 52 (1989) 345

IR, CGC (Fortran, 4846). Computer generated subgroup-symmetry adapted irreducible representations and CG coefficients of space groups by the eigenfunction method. Jia-Lun Ping, Qing-Rong Zheng, Bing-Qing Chen, Jin-Quan Chen — ABHE 52 (1989) 355

CAMM (Fortran, 1198). Cumulative atomic multipole moments and point charge models describing molecular charge distribution. A. Sawaryn, W.A. Sokalski — ABFV 52 (1989) 397

HONDO VERSION 7.0 (Fortran, 97320, Manual 155 pages). The general atomic and molecular electronic structure system HONDO: version 7.0. M. Dupuis, J.D. Watts, H.O. Villar, G.J.B. Hurst — ABFS 52 (1989) 415

FCI (Fortran, 2852). A determinant based full configuration interaction program. P.J. Knowles, N.C. Handy — ABHV 54 (1989) 75

MOLSIMIL-88 (Fortran, 2643, Manual 11 pages). MOLSIMIL-88: molecular similarity calculations using a CNDO-like approximation. R. Carbo, B. Calabuig — ABJG 55 (1989) 117

GJVGEN (Fortran, 1666, Manual 7 pages). Orthogonal generalized Jacobi coordinates for N-body systems. K. Davie, R. Wallace — ABJJ 55 (1989) 463

SYMMET VERSION 2 (Fortran, 1279). A new version of the program for the generation of symmerty-adapted functions for molecular calculations. L. Skala. Other version: AAPD (§16.1) — ABRA 58 (1990) 343

16.2. Spectra

RITZ COMBINATION PRINCIPLE (Fortran, 113). Program for fitting transition energies into a level scheme according to the combination principle. I.R. Williams — ABKD 1 (1970) 465

ROSCOS (Algol, 1266). Analysis of the intensity distribution in the rotational structure of the electronic spectra of diatomic molecules by computer simulation. R.Ch. Baas, C.I.M. Beenakker — ACRW 8 (1974) 236

UPEAK (Fortran, 4406). UPEAK: spectro-oriented routine for mixture decomposition. V.B. Zlokazov — ABAA 13 (1977) 389

CARS (Fortran, 749). CARS spectral profiles for homonuclear diatomic molecules. W.M. Shaub, S. Lemont, A.B. Harvey — AAHJ 16 (1978) 73

DIFFUS2 (Fortran, 781). A Fortran program to interpret pulsed field-gradient spin-echo diffusion data. E.D. von Meerwall. Other version: ABNI (§16.4) — ABNE 17 (1979) 309

DOMUS (Fortran, 2596). DOMUS: a program for the analysis of two-dimensional spectra. V.B. Zlokazov — ABAB 18 (1979) 281

ASYTOP (Fortran, 3227). ASYTOP: a program for detailed analysis of gas phase magnetic resonance spectra of asymmetric top molecules. T.J. Sears — ACDD 34 (1984) 123

DBLSIG (Fortran, 968). A Fortran program for the calculation of hyperfine structure and Stark effect in the rotational transition of a 2sigma diatomic molecule. K.P.R. Nair — ACDC 34 (1984) 163

ASYROT (Fortran, 4248). Computer assistance in the analysis of molecular spectra. I. Rotational structure of high resolution singlet-singlet bands. F.W. Birss, D.A. Ramsay. Other version: ABBA (§16.2) — ACDS 38 (1985) 83

DBLSIG2 (Fortran, 1113). A Fortran program for the calculation of hyperfine structure in the rotational transition of a doublet sigma diatomic molecule. II. Magnetic and electric quadrupole interaction from both nuclei. K.P.R. Nair — AAFY 41 (1986) 59

CARS SPECTRAL PROFILES (Fortran, 3537). Algorithms for calculating coherent anti-Stokes Raman spectra: application to several small molecules. J.C. Luthe, E.J. Beiting, F.Y. Yueh — AALG 42 (1986) 73

ASYROT PC (Fortran, 4317). A new version of ASYROT for the HP Vectra or any IBM AT compatible computer. R.H. Judge. Other version: ACDS (§16.2) — ABBA 47 (1987) 361

SIMULDENS (Pascal, 2372). Computer simulation of FT-NMR multiple pulse experiment. A. Allouche, G. Pouzard — ABHL 54 (1989) 171

Molecular physics and physical chemistry *(continued)*

16.3. Molecular vibrations

FRANCK-CONDON FACTOR PROGRAM (Fortran, 537). A program to calculate Franck-Condon factors. A.C. Allison — AACA 1 (1969) 21
000A CORRECTION 21/10/70 (Fortran) — 1 (1970) 23
VIBROT I (Algol, 293). I. Program for calculating degenerate Raman bands of symmetric tops with an adaptation for infrared bands. F.N. Masri, I.R. Williams. Other version: AAGF (§16.3) — AAGC 1 (1970) 349
0001 ADAPT VIBROT I FOR INFRARED (Algol, 33). I. Program for calculating degenerate Raman bands of symmetric tops with an adaptation for infrared bands. F.N. Masri, I.R. Williams — 1 (1970) 350
VIBROT II (Algol, 231). II. Program for calculating triply degenerate Raman bands of spherical tops with an adaptation for infrared bands. F.N. Masri, I.R. Williams. Other version: AAGG (§16.3) — AAGE 2 (1971) 87
0001 ADAPT VIBROT II FOR INFRARED (Algol, 30). II. Program for calculating triply degenerate Raman bands of spherical tops with an adaptation for infrared bands. F.N. Masri, I.R. Williams — 2 (1971) 88
FORTRAN VIBROT I (Fortran, 269). I. A FORTRAN program for calculating degenerate Raman bands of symmetric tops with an adaptation for infrared bands. F.N. Masri, I.R. Williams. Other version: AAGC (§16.3) — AAGF 2 (1971) 298
0001 VIBROT I FOR INFRARED (Fortran, 27). I. A FORTRAN program for calculating degenerate Raman bands of symmetric tops with an adaptation for infrared bands. F.N. Masri, I.R. Williams — 2 (1971) 298
FORTRAN VIBROT II (Fortran, 229). II. A FORTRAN program for calculating degenerate Raman bands of spherical tops with an adaptation for infrared bands. F.N. Masri, I.R. Williams. Other version: AAGE (§16.3) — AAGG 2 (1971) 299
0001 VIBROT II FOR INFRARED (Fortran, 27). II. A FORTRAN program for calculating degenerate Raman bands of spherical tops with an adaptation for infrared bands. F.N. Masri, I.R. Williams — 2 (1971) 299
MORSEFNS (Fortran, 136). A program for normalised Morse functions. J.R. Parkinson, D.T. Birtwistle — AAGM 4 (1972) 257
RKRPOT (Fortran, 251). A fast quadrature method for computing diatomic RKR potential curves. J. Tellinghuisen — AAEE 6 (1973) 221
VIBOCO (Fortran, 801). Vibrational energies of CO2. W.C. Maguire — ABWC 10 (1976) 368
FCFRKR (Fortran, 6963). FCFRKR: a procedure to evaluate Franck-Condon type integrals for diatomic molecules. H. Telle, U. Telle — AAOR 28 (1982) 1
0001 FCFRKR*ADAPT1 (Fortran, 68). Comments on the program FCFRKR. H.H. Telle, U. Telle — 36 (1985) 109
0002 FCFRKR*LEVEL2CDC (Fortran, 78). Comments on the program FCFRKR. H.H. Telle, U. Telle — 36 (1985) 109
ATOMDIAT (Fortran, 3706). ATOMDIAT: a program for calculating variationally exact ro-vibrational levels of "floppy" triatomics. J. Tennyson — ACEN 29 (1983) 307
0001 ATOMDIAT2 (Fortran, 190). ATOMDIAT2 and GENPOT: adaptations of ATOMDIAT for the ro-vibrational levels of any floppy triatomic using a general potential function. J. Tennyson — 32 (1984) 109
0002 GENPOT (Fortran, 218). ATOMDIAT2 and genpot: adaptations of atomdiat for the ro-vibrational levels of any floppy triatomic using a general potential function. J. Tennyson — 32 (1984) 109
YDY84C (Fortran, 5408). Spectroscopic energy coefficients for vibration-rotational states of dinuclear molecules. J.F. Ogilvie — ACET 30 (1983) 101
MOLFORCE (Fortran, 1481). MOLFORCE: a computer program for calculation of molecular force constants using the generalized inverse matrix. B. Gellai — AABG 36 (1985) 177
000A CORRECTION 29/01/86 (Fortran) — 39 (1986) 447
VIBMATEL (Fortran, 5916). Analytic vibrational matrix elements for diatomic molecules. J.P. Bouanich, J.F. Ogilvie, R.H. Tipping — AAFQ 39 (1986) 439
TRIATOM (Fortran, 2688). TRIATOM, SELECT and ROTLEV: for the calculation of the ro-vibrational levels of triatomic molecules. J. Tennyson. Subroutine required (for data): AALP (§16.3) — AALO 42 (1986) 257
SELECT (Fortran, 1934). TRIATOM, SELECT and ROTLEV: for the calculation of the ro-vibrational levels of triatomic molecules. J. Tennyson — AALP 42 (1986) 257
ROTLEV (Fortran, 3440). TRIATOM, SELECT and ROTLEV: for the calculation of the ro-vibrational levels of triatomic molecules. J. Tennyson. Subroutine required (for data): AALO (§16.3) — AALQ 42 (1986) 257
ROTVIBMATEL (Fortran, 10512). Analytic vibration-rotational matrix elements for diatomic molecules. J.P. Bouanich — ABBJ 47 (1987) 259
F.F.C. (Fortran, 928). F.F.C.: A program for calculating Franck-Condon factors and R-centroids for transitions between the vibrational-rotational levels of two electronic states of a diatomic molecule. M. Dagher, H. Kobeissi — ABBE 47 (1987) 305

PANDORA (Fortran, 4500, Manual 38 pages). Quantum vibrational eigenstates from classical origins. J.H. Frederick, E.J. Heller ABDL 51 (1988) 83
DEMETER (Fortran, 2533, Manual 38 pages). Quantum vibrational eigenstates from classical origins. J.H. Frederick, E.J. Heller. Subroutine required (for data): ABDL (§16.3) ABDM 51 (1988) 83
PERTURB (C, 17298). PERTURB: a program for calculating vibrational energies by generalized algebraic quantization. L.E. Fried, G.S. Ezra ABDN 51 (1988) 103
LUCY (Fortran, 1774). LUCY: a Fortran implementation of semiclassical spectral quantization. M.A. Mehta, N. De Leon ABDO 51 (1988) 115
ACTION (Fortran, 4747). A program for determining primitive semiclassical eigenvalues for vibrating/rotating nonlinear triatomic molecules. G.C. Schatz ABDP 51 (1988) 135
VANVLK (Fortran, 1129). VANVLK: an algebraic manipulation program for canonical Van Vleck perturbation theory. E.L. Sibert III ABDQ 51 (1988) 149
RKRINV (Fortran, 2807). Determination of potential energy surfaces of linear triatomics from vibration-rotation spectra: an inversion method applied to CO2. H. Romanowski, M.A. Ratner, R.B. Gerber ABDR 51 (1988) 161
TETRA (Fortran, 1847). Local mode vibrations in tetrahedral molecules. L. Halonen, M.S. Child ABDS 51 (1988) 173
SLEIGC (Fortran, 5192). Rotation-vibration eigenvalues and vectors. B.H. Chang, Jae Shin Lee, D. Secrest ABDT 51 (1988) 195
SP2D (Fortran, 660). Particles-on-a-sphere method for computing the rotational-vibrational spectrum of H2O. D.M. Leitner, G.A. Natanson, R.S. Berry, P. Villarreal, G. Delgado-Barrio ABDU 51 (1988) 207
OS2D (Fortran, 763). Particles-on-a-sphere method for computing the rotational-vibrational spectrum of H2O. D.M. Leitner, G.A. Natanson, R.S. Berry, P. Villarreal, G. Delgado-Barrio ABDV 51 (1988) 207
NUMROV (Fortran, 1500). Solution of bound state single variable eigenproblems by the extended renormalized Numerov method. K. Davie, R. Wallace ABDW 51 (1988) 217
GVSCF (Fortran, 1701). GVSCF: a general code to perform vibrational self-consistent field calculations. A. Wierzbicki, J.M. Bowman ABDX 51 (1988) 225
VIBCI (Fortran, 2061). A vibrational configuration interaction program for energies and resonance widths. S.C. Tucker, T.C. Thompson, J.G. Lauderdale, D.G. Truhlar ABDY 51 (1988) 233
SURVIBTM (Fortran, 12251). Polyatomic surface fitting, vibrational-rotational analysis, expectation value and intensity program. W.C. Ermler, H.C. Hsieh, L.B. Harding ABDZ 51 (1988) 257
TRIATOM (Fortran, 2934). A program suite for the calculation of ro-vibrational spectra of triatomic molecules. J. Tennyson, S. Miller. Subroutine required (for data): ABJX (§16.3) ABJW 55 (1989) 149
SELECT (Fortran, 2152). A program suite for the calculation of ro-vibrational spectra of triatomic molecules. J. Tennyson, S. Miller ABJX 55 (1989) 149
ROTLEVD (Fortran, 3994). A program suite for the calculation of ro-vibrational spectra of triatomic molecules. J. Tennyson, S. Miller. Subroutine required (for data): ABJW (§16.3) ABJY 55 (1989) 149
DIPOLE (Fortran, 2619). A program suite for the calculation of ro-vibrational spectra of triatomic molecules. J. Tennyson, S. Miller. Subroutines required (for data): ABJW (§16.3), ABJY (§16.3) ABJZ 55 (1989) 149
SPECTRA (Fortran, 938). A program suite for the calculation of ro-vibrational spectra of triatomic molecules. J. Tennyson, S. Miller. Subroutine required (for data): ABJZ (§16.3) ABLA 55 (1989) 149

16.4. Experimental analysis

UPEAK (Fortran, 4406). UPEAK: spectro-oriented routine for mixture decomposition. V.B. Zlokazov ABAA 13 (1977) 389
DIFFUS2 (Fortran, 781). A Fortran program to interpret pulsed field-gradient spin-echo diffusion data. E.D. von Meerwall. Other version: ABNI (§16.4) ABNE 17 (1979) 309
BATAN (Fortran, 1042). Analysis of Faradaic impedance experimental measurements. A. Batana, E.R. Gonzalez, M.C. Monard ACZA 18 (1979) 27
DIFFUS5 (Fortran, 1444). A Fortran program to fit diffusion models to field-gradient spin echo data. E.D. von Meerwall, R.D. Ferguson. Other version: ABNE (§16.4) ABNI 21 (1981) 421
CLUSTER IDENTIFICATION (Fortran, 184). Identification of clusters in computer experiments with periodic boundary conditions. H. Bunz ACKZ 42 (1986) 435
SPEX8 (Fortran, Microsoft Macro Assembler, 4930, Manual 35 pages). A data acquisition system for spectroscopy using an IBM PC. M. Lowe, S. Blumenroeder, P.H. Kutt ABBZ 50 (1988) 367

16.5. Electron scattering

Other version: ACZS (§16.5) ACQO 1 (1970) 445
Other versions: ACWO (§16.5), ACZR (§16.5), AALA (§16.5) ACQW 2 (1971) 261

VIBAD (Fortran, 1157). Rovibrational cross sections from reactance matrices calculated in adiabatic nuclei approximation. R.J.W. Henry ACWI 10 (1975) 375
Other versions: ACQW (§16.5), ACZR (§16.5), AALA (§16.5) ACWO 11 (1976) 237
Other versions: ACQW (§16.5), ACWO (§16.5), AALA (§16.5) ACZR 20 (1980) 267
ELECTRON MOLECULE SCATTERING (Fortran, 10926). Electron scattering by closed or open shell diatomic molecules. G. Raseev. Subroutine required (for data): ACZR (§16.5). Other version: ACQO (§16.5) ACZS 20 (1980) 275
ALAM (Fortran, 1126). ALAM: a program for the calculation and expansion of molecular charge densities. M.A. Morrison ACZW 21 (1980) 63
VLAM (Fortran, 1709). VLAM: a program for computing the electron-molecule static interaction potential from a Legendre expansion of the molecular charge density. G.B. Schmid, D.W. Norcross, L.A. Collins ACZX 21 (1980) 79
SAS14 (Fortran, 1600). The vibrational excitation of diatomic molecules by electron impact. S.A. Salvini, D.G. Thompson AAJF 22 (1981) 49
EXLAM (Fortran, 5134). EXLAM: a program for the calculation and expansion of local model exchange potentials. W.F. Weitzel, T.L. Gibson, M.A. Morrison. Subroutines required: ACZW (§16.5), ACZX (§16.5) AANY 30 (1983) 151
EROTVIB (Fortran, 3214). EROTVIB: a general program to calculate rotationally and/or vibrationally elastic and inelastic cross sections for electron (positron) scattering by spherical, symmetric and asymmetric top molecules. A. Jain, D.G. Thompson. Subroutine required: ACFD (§16.1) AAJM 32 (1984) 367
RESFIT (Fortran, 1612). RESFIT: a multichannel resonance fitting program. K. Bartschat, P.G. Burke AAFX 41 (1986) 75
STOEX (Fortran, 566). Errors in the three CPC versions of the program to calculate the single centre expansion of the electron diatomic-molecule static potential. L. Malegat, M. Le Dourneuf, Vo Ky Lan. Other versions: ACQW (§16.5), ACWO (§16.5), ACZR (§16.5) AALA 41 (1986) 181
DCS (Fortran, 2332). DCS: a program for calculating differential cross sections for the electronic excitation of diatomic molecules at fixed nuclei. L. Malegat ABTG 60 (1990) 391

16.6. Photon interactions

PEAD (Fortran, 658). PEAD: for the calculation of photoelectron angular distributions of linear molecules. J. Tennyson, N. Chandra AAXD 46 (1987) 99
BCONT (Fortran, 3097, Manual 53 pages). Bound → continuum intensities: a computer program for calculating absorption coefficients, emission intensities or (golden rule) predissociation rates. R.J. Le Roy ABHC 52 (1989) 383

16.7. Elastic scattering and energy transfer

PAMPA (Fortran, 877). Multistate molecular treatment of atomic collisions in the impact parameter approximation. I. Integration of coupled equations and calculation of transition amplitudes for the straight line case. C. Gaussorgues, R.D. Piacentini, A. Salin ACWJ 10 (1975) 223
000A CORRECTION 21/06/76 (Fortran) 11 (1976) 407
000B CORRECTION 28/03/79 (Fortran) 17 (1979) 424
TANGO (Fortran, 904). Multistate molecular treatment of atomic collisions in the impact parameter approximation. III – Integration of coupled equations and calculation of transition amplitudes for Coulomb trajectories. R.D. Piacentini, A. Salin ACWU 12 (1976) 199
000A CORRECTION 27/03/79 (Fortran) 17 (1979) 425
EIKON (Fortran, 644). Multistate molecular treatment of atomic collisions in the impact parameter approximation. II. Calculation of differential cross-sections from the transition amplitudes for the straight line case. See erratum Comput. Phys. Commun. 13 (1977) 295. R.D. Piacentini, A. Salin. Subroutine required (for data): ACWJ (§16.7) ACXD 13 (1977) 57
EDWIN (Fortran, 3477). EDWIN: a program for calculating inelastic molecular collision cross sections using the exponential distorted wave and related approximate methods. G.G. Balint-Kurti, J.H. van Lenthe, R. Saktreger, L. Eno AAJC 19 (1980) 359
VIBREQ (Fortran, 1739). A program to solve a set of linear coupled differential equations describing a collision process with several electronic and vibrational degrees of freedom. M.R. Spalburg, U.C. Klomp AAOX 28 (1982) 207
CARLO (Fortran, 907). A Monte Carlo calculation of the dissociation of fast H2+ ions traversing thin carbon foils. W.D. Ruden, R.M. Schectman AAOZ 28 (1983) 355

ADIAV (Fortran, 401). Rate constants and cross sections for vibrational transitions in atom-diatom and diatom-diatom collisions. G.D. Billing ACFU 32 (1984) 45
DIDIAV (Fortran, 947). Rate constants and cross sections for vibrational transitions in atom-diatom and diatom-diatom collisions. G.D. Billing ACFV 32 (1984) 45
RATECONS (Fortran, 109). Rate constants and cross sections for vibrational transitions in atom-diatom and diatom-diatom collisions. G.D. Billing ACFW 32 (1984) 45
000A CORRECTION 15/04/85 (Fortran) 38 (1985) 118
DIDIEX (Fortran, 1034). Rate constants for vibrational transitions in diatom-diatom collisions. G.D. Billing AATY 44 (1987) 121
000A CORRECTION 14/11/88 (Fortran) 52 (1989) 443
EDWAVE (Fortran, 2059). A program to evaluate vibrationally inelastic collisional cross sections of atom-diatom systems. M.M. Novak AAXV 46 (1987) 417

16.8. Rearrangement collisions, charge transfer and chemical reactions

H+ + H(2) CHARGE TRANSFER (Fortran, 1054). Computation of charge transfer probability between protons and excited hydrogen atoms. V. Malaviya ACQQ 1 (1970) 380
CLASSICAL TRAJECTORIES 324 (Algol, 472). Trajectory calculations for the reaction K+HBr – KBr+H in the eV-region. A. van der Meulen AAGI 3 (1972) 42
SOLVE D.E. FOR MATRIX ELEMENTS (Fortran, 1494). Solution of differential equations for exchange matrix elements in heavy particle collisions. L.A. Parcell AAGU 5 (1973) 283
IPFVAIJ (Fortran, 1031). A programming package for the calculation of cross-sections and probabilities for charge-exchange processes. J. Van den Bos ACRP 7 (1974) 163
IPFDEQ (Fortran, 992). A programming package for the calculation of cross-sections and probabilities for charge-exchange processes. J. Van den Bos. Subroutine required: ACRP (§16.8) ACRQ 7 (1974) 163
PAMPA (Fortran, 877). Multistate molecular treatment of atomic collisions in the impact parameter approximation. I. Integration of coupled equations and calculation of transition amplitudes for the straight line case. C. Gaussorgues, R.D. Piacentini, A. Salin ACWJ 10 (1975) 223
000A CORRECTION 21/06/76 (Fortran) 11 (1976) 407
000B CORRECTION 28/03/79 (Fortran) 17 (1979) 424
TANGO (Fortran, 904). Multistate molecular treatment of atomic collisions in the impact parameter approximation. III – Integration of coupled equations and calculation of transition amplitudes for Coulomb trajectories. R.D. Piacentini, A. Salin ACWU 12 (1976) 199
000A CORRECTION 27/03/79 (Fortran) 17 (1979) 425
EIKON (Fortran, 644). Multistate molecular treatment of atomic collisions in the impact parameter approximation. II. Calculation of differential cross-sections from the transition amplitudes for the straight line case. See erratum Comput. Phys. Commun. 13 (1977) 295. R.D. Piacentini, A. Salin. Subroutine required (for data): ACWJ (§16.8) ACXD 13 (1977) 57
DATSTOR (Fortran, 1511). Numerical modelling of a chemical plasma. III. DATSTOR: a program to create a database containing information on rate coefficients of chemical reactions. S.A. Roberts ACZF 18 (1979) 377
IPEXMAT (Fortran, 828). Subroutines for the evaluation of exchange integrals in the impact parameter formulation of atomic charge transfer collisions. C.J. Noble. Subroutine required (for data): ACZV (§16.10) ACZU 19 (1980) 327
Other version: ACCJ (§16.8) AAHL 23 (1981) 153
Other version: ACCK (§16.8) AAHM 23 (1981) 153
UNIMOL (Fortran, 2222). UNIMOL: a program for Monte Carlo simulation of RRKM unimolecular decomposition in molecular beam experiments. K. Rynefors AAOA 27 (1982) 201
LZRATE (Fortran, 675). A program for the calculation of Landau-Zener cross sections and rate coefficients. S. Bienstock AACJ 29 (1983) 333
CDW (Fortran, 686). Computation of total cross-sections for electron capture in high energy collisions. II. Dz. Belkic, R. Gayet, A. Salin ACFA 30 (1983) 193
CDW1 (Fortran, 781). Computation of total cross-sections for electron capture in high energy collisions III. Dz. Belkic, R. Gayet, A. Salin. Other version: AAHL (§16.8) ACCJ 32 (1984) 385
CDW2 (Fortran, 876). Computation of total cross-sections for electron capture in high energy collisions III. Dz. Belkic, R. Gayet, A. Salin. Other version: AAHM (§16.8) ACCK 32 (1984) 385

POLYRATE (Fortran, 21663, Manual 204 pages). POLYRATE: a general computer program for variational transition state theory and semiclassical tunneling calculations of chemical reaction rates. A.D. Isaacson, D.G. Truhlar, S.N. Rai, R. Steckler, G.C. Hancock, B.C. Garrett, M.J. Redmon — ABBD 47 (1987) 91

HIONDAT (Fortran, 8263). Data base of cross sections and reaction rates for hydrogen ion sources. K. Smith, A.H. Glasser — ABHF 54 (1989) 391

16.9. Classical methods

Other version: ACRB (§16.9) — ACQT 2 (1971) 114

EVAR EDITION 02 (Fortran, 3828). Classical relative motion of 2 particles (EVAR edition 02). D. Banks, I.C. Percival, J.McB. Wilson. Other version: ACQT (§16.9) — ACRB 3 (1972) 197

EVA2 EDITION 01 (Fortran, 1451). Classical motion of 2 particles (EVA2 edition 01). D. Banks, I.C. Percival, J.McB. Wilson. Subroutine required: ACRB (§16.9) — ACRC 3 (1972) 221

CLASSICAL P-H COLLISIONS (Fortran, 3060). Classical collisions of protons with hydrogen atoms. D. Banks, K.S. Barnes, P.E. Hughes, I.C. Percival, D. Richards, N.A. Valentine, J.McB. Wilson — ACXO 13 (1977) 251

SCATXS (Fortran, 1137). Calculation of differential scattering cross-sections for classical binary elastic collisions. C. O'Raifeartaigh, J.F. McGilp — AANX 28 (1983) 255

16.10. Wave functions and integrals

POLYMOL (Fortran, 6793). POLYMOL: a general program for the calculation of ground state wave functions for polymers. J.-M. Andre — ABYA 1 (1970) 391

DFZERO (Fortran, 286). High speed evaluation of F0(x). L.L. Shipman, R.E. Christoffersen — ACAA 2 (1971) 201

FIELD (Fortran, 568). Field and field gradient integrals based on gaussian type orbitals. O. Matsuoka — ABYB 3 (1972) 130

FGRAD (Fortran, 640). Field and field gradient integrals based on gaussian type orbitals. O. Matsuoka — ABYC 3 (1972) 131

ONEINT (Fortran, 839). Dipole and overlap integrals between Slater-type functions and continuum Coulomb functions. K.K. Docken, A.L. Ford — ABWB 11 (1976) 49

GRAVE (Fortran, 692). Calculation of wave-function and collision matrix elements for one-electron diatomic molecules. See erratum Comput. Phys. Commun. 15 (1978) 443. A. Salin — ACXX 14 (1978) 121

MEDOC (Fortran, 1120). Calculation of wave-functions and collision matrix elements for one-electron diatomic molecules. A. Salin. Subroutine required: ACXX (§16.10) — ACXY 14 (1978) 121

000A CORRECTION 22/08/80 (Fortran) — 20 (1980) 462

TRIO (Fortran, 2186). Inter-electron repulsion integrals for three-open-shell configurations in cubic symmetry. B. Bird, C. Daul, P. Day — AAKT 14 (1978) 273

STP (Fortran, 673). An integral package for one-centre integrals over Slater-Transform-Preuss functions. E. Yurtsever — ACYU 16 (1978) 65

REXMAT (Reduce2, 494). Subroutines for the evaluation of exchange integrals in the impact parameter formulation of atomic charge transfer collisions. C.J. Noble — ACZV 19 (1980) 327

IBMOL-7 (Fortran, 18476). A program to introduce local symmetry in ab initio computations of molecules: IBMOL-7. E. Ortoleva, G. Castiglione, E. Clementi — ACYY 19 (1980) 337

PSEPOT (Fortran, 971). Pseudopotential matrix elements in the Gaussian basis. M. Kolar. Other version: AAQM (§16.10) — AAQL 23 (1981) 275

PSEPO1 (Fortran, 958). Pseudopotential matrix elements in the Gaussian basis. M. Kolar. Subroutine required: AAQN (§16.10). Other version: AAQL (§16.10) — AAQM 23 (1981) 275

COMPANGI (Fortran, 249). Pseudopotential matrix elements in the Gaussian basis. M. Kolar — AAQN 23 (1981) 275

FRTRF (Fortran, 569). Computation of Fourier transform of a general two-centre STO charge distribution. B.R. Junker — AANO 23 (1981) 377

MATSUP (Fortran, 840). MATSUP: a program to obtain two-electron repulsion integrals from a sparse file of P supermatrix elements. M. Benard — AARZ 27 (1982) 79

TCOI (Fortran, 825). Two centre overlap integrals of numerical wavefunctions. R.P. Gupta, Rashmi-Rekha, S. Pal — ACEF 29 (1983) 87

PP-I-1982 (Fortran, 5108). A general program to compute two electron repulsion integrals. P. Habitz, E. Clementi — ACEL 29 (1983) 301

FRANKC (Fortran, 450). Calculation of the auxiliary functions Fm(z). L.F. Errea, L. Mendez, A. Riera — ACFL 31 (1984) 47

OFMO (Fortran, 1173). Reduction of orbital sets. E. Francisco, L. Seijo, L. Pueyo — AATB 43 (1987) 269

TSYM (Fortran, 6048). Computation of relativistic symmetry orbitals for finite double point groups. See erratum Comput. Phys. Commun. 55 (1989) 469. J. Meyer, W.-D. Sepp, B. Fricke, A. Rosen — ABHW 54 (1989) 55

ALAIN (Fortran, 935). General subroutines for calculation of atomic and molecular two-centre integrals. J.P. Hansen ABLY 58 (1990) 217

ASTERIX-INTEGS (Fortran, 20964). A program system for ab initio MO calculations on vector and parallel processing machines. Part 1: evaluation of integrals. R. Ernenwein, M.-M. Rohmer, M. Benard ABRB 58 (1990) 305

ASTERIX-SCFCS, ASTERIX-SCFOS (Fortran, 16674). A program system for ab initio MO calculations on vector and parallel processing machines. Part 2: SCF closed-shell and open-shell iterations. M.-M. Rohmer, J. Demuynck, M. Benard, R. Wiest, C. Bachmann, C. Henriet, R. Ernenwein. Subroutine required: ABRB (§16.10) ABRR 60 (1990) 127

16.11. Polymers

POLYMOL (Fortran, 6793). POLYMOL: a general program for the calculation of ground state wave functions for polymers. J.-M. Andre ABYA 1 (1970) 391

17. Nuclear physics

17.1. Apparatus design

COMBAT (Fortran, 1036). A program for closed orbit minimization by analytic technique. J.V. Trotman ABCF 5 (1973) 56

MCS (Fortran, 867). Monte Carlo simulation of photons in two-layered media for density gauges. E.R. Christensen AAUK 7 (1974) 185

MCD (Fortran, 631). Computer simulation of photons in spheric media for density gauges. E.R. Christensen. Subroutine required: AAUK (§17.1) AAUL 7 (1974) 192

.LINEAR ACCELERATOR CAVITY CODE (Fortran, 6193). A linear accelerator cavity code based on the finite element method. A. Konrad. Subroutine required: ACSF (§10) ACSK 13 (1977) 349

SATDSK (Fortran, 1286). SATDSK: a numerical simulation of the magnetic field due to saturated iron in cyclotron poletips. G.S. McNeilly ABKI 23 (1981) 199

DSAMER (Fortran, 1322). A computer program for nuclear lifetimes measurements by DSAM using a self supporting target. C. Morand, Tsan Ung Chan ABQM 23 (1981) 393

IMBUI-G, NEUTRON TOF SIMULATOR (RTE Assembler, 2225). A time-of-flight spectrum simulator for neutron elastic and inelastic scattering. G.H.R. Kegel ABKJ 24 (1981) 205

DELPHINE (Fortran, 713). DELPHINE: program to bunch a D.C. beam through a tandem accelerator for injection into a cyclotron with superconducting magnet. M.S. Antony, J.M. Britz, J. Denimal AARW 25 (1982) 311

PHOCHA (Fortran, 1492). PHOCHA: a Monte Carlo program to calculate the characteristics of a beam of photons produced by annihilation and bremsstrahlung of relativistic positrons. E. De Sanctis, V. Lucherini, V. Bellini AAVN 30 (1983) 71

MURI, NEUTRON YIELDS AND SPECTRA (RTE Assembler). Fluences and energy spectra of fast neutrons from a proton-irradiated thick lithium target. G.H.R. Kegel AABP 36 (1985) 321

17.2. Energy loss

STRAGL (Fortran, 1307). Energy-loss straggling of heavy charged particles. R.G. Clarkson, N. Jarmie ABON 2 (1971) 433

ELECTRON ENERGY LOSS (Fortran, 2223). Electron energy deposition in a gaseous mixture. L.R. Peterson, T. Sawada, J.N. Bass, A.E.S. Green ACRH 5 (1973) 239

E-DEP-1 (Fortran, 2047). Depth distribution of energy deposition by ion bombardment. I. Manning, G.P. Mueller ACIB 7 (1974) 85

0001 CALCULATE LATERAL RANGES (Fortran, 68). Adaptation of a program for depth distribution of energy deposition by ion bombardment: calculation of ion lateral ranges. I. Manning, M. Rosen, J.E. Westmoreland 12 (1976) 335

000A CORRECTION 21/09/75 (Fortran) 12 (1976) 339

000B CORRECTION 5/03/75 (Fortran) 12 (1976) 339

0002 BETTER STOPPING POWERS (Fortran, 2912). Adaptation of a program for depth distribution of energy deposition by ion bombardment: better stopping powers. C.M. Davisson, I. Manning 42 (1986) 137

MCS (Fortran, 867). Monte Carlo simulation of photons in two-layered media for density gauges. E.R. Christensen AAUK 7 (1974) 185

LANDAU (Fortran, 300). Programs for the Landau and the Vavilov distributions and the corresponding random numbers. B. Schorr AAUI 7 (1974) 215

Nuclear physics — *Energy loss (continued)*

VAVILOV (Fortran, 636). Programs for the Landau and the Vavilov distributions and the corresponding random numbers. B. Schorr AAUJ 7 (1974) 215
NELAS (Fortran, 664). Nuclear energy loss and scattering of ions penetrating thin layers of matter. R. Skoog AAUM 7 (1974) 392
LANDAU (Fortran, 691). A program package for the Landau distribution. K.S. Kolbig, B. Schorr ABAD 31 (1984) 97
MURI, NEUTRON YIELDS AND SPECTRA (RTE Assembler). Fluences and energy spectra of fast neutrons from a proton-irradiated thick lithium target. G.H.R. Kegel AABP 36 (1985) 321
DEPOS (Fortran, 150). DEPOS: parametric electron energy deposition module in slabs. B.L. Lathrop, B.R. Wienke AADE 38 (1985) 389
MCSDA (Fortran, 1288). A Monte Carlo program to simulate the penetration and energy loss of keV electrons through matter. F. Salvat, J.D. Martinez, R. Mayol, J. Parellada AALC 42 (1986) 93

17.3. Mössbauer spectra

MOSSBAUER DATA LEAST-SQUARES FIT (Fortran, 2900). Versatile program for analysis of Mossbauer spectra. M.F. Bent, B.I. Persson, D.G. Agresti ABQA 1 (1969) 67
MOSSBAUER FITTING PROGRAM (Fortran, 1078). Computer analysis of Mossbauer spectra. B.L. Chrisman, T.A. Tumolillo ABIB 2 (1971) 322
MOSSBAUER SCATTERING SPECTRA (Fortran, 1942). Computer simulation of Mossbauer scattering spectra. J.L. Groves ABOP 3 (1972) 339
PARAMAGNETIC MOSSBAUER SPECTRA (Fortran, 1698). Computer simulations of Mossbauer spectra for an effective spin S=1/2 Hamiltonian. E. Munck, J.L. Groves, T.A. Tumolillo, P.G. Debrunner ABMD 5 (1973) 225
000A CORRECTION 18/01/73 (Fortran) 5 (1973) 395
FLEXIBLE MOSSBAUER FIT ROUTINE (Fortran, 2023). A flexible least squares routine for general Mossbauer effect spectra fitting. W. Wilson, L.J. Swartzendruber ACML 7 (1974) 151
MOSAUT AND MOSINP (Fortran, 5613). A program to analyze series of Mossbauer spectra. E. Verbiest ACEG 29 (1983) 131
MOSPLV (Fortran, 1992). MOSPLV: a program for simulation of complex Mossbauer spectra in polycrystalline samples. R. Chipaux ABTH 60 (1990) 405

17.4. Experimental analysis – general

OPTIME SYSTEM (Fortran, 10992). Users manual for the OPTIME system. P.H. Eberhard, W.O. Koellner AAYB 5 (1973) 163
LINCOM (Fortran, 968). Search program for significant variables. M.J. O'Connell ABCG 8 (1974) 49
GSFIT (Fortran, 1415). Multivariate least squares fitting program using modified Gram-Schmidt transformations. M.J. O'Connell ABCH 8 (1974) 56
LGFIT2 (Fortran, 1368). A least-squares spectral curve fitting routine for strongly overlapping lorentzians or gaussians. E.D. von Meerwall ABMK 9 (1975) 117
PEAK2 (Fortran, 1290). A FORTRAN code for automatic spectrum analysis on medium-scale computers. E.D. von Meerwall ABML 9 (1975) 351
SPEC3 (Fortran, 1004). A general-purpose routine for the analysis of spectroscopic peak shapes. E.D. von Meerwall ABMM 10 (1975) 145
ANNA (Fortran, 1128). ANNA: an interactive program for analysis of one-dimensional pulse-height spectra. P.A. Assimakopoulos, S. Kossionides ABMN 11 (1976) 37
JOTOV (Fortran, 5191). Identification of nuclear reactions registered in ionographic detectors. M. Ortega, A. Vidal-Quadras, M. Tomas, F. Fernandez, V. Gandia, C. Jacquot ABKF 11 (1976) 287
COUNTING FEW RADIOACTIVE ATOMS (Fortran, 123). Counting a small number of radioactive atoms. A.M. Aurela. Other versions: AAUY (§17.4), ABQR (§17.4) AAUS 13 (1977) 281
UPEAK (Fortran, 4406). UPEAK: spectro-oriented routine for mixture decomposition. V.B. Zlokazov ABAA 13 (1977) 389
COUNTING FEW RADIOACTIVE ATOMS/2 (Fortran, 144). Counting a small number of radioactive atoms, second program. A.M. Aurela. Other versions: AAUS (§17.4), ABQR (§17.4) AAUY 17 (1979) 301
DIFFUS2 (Fortran, 781). A Fortran program to interpret pulsed field-gradient spin-echo diffusion data. E.D. von Meerwall. Other version: ABNI (§17.4) ABNE 17 (1979) 309
SAMCS1 (Fortran, 828). A Fortran program to perform signal averaging, multichannel scaling and pulse-height analysis. E.D. von Meerwall ABNG 18 (1979) 417
LOUHI78 (Fortran, 3227). General purpose unfolding program LOUHI78 with linear and nonlinear regularizations. J.T. Routti, J.V. Sandberg AAVD 21 (1980) 119
DIFFUS5 (Fortran, 1444). A Fortran program to fit diffusion models to field-gradient spin echo data. E.D. von Meerwall, R.D. Ferguson. Other version: ABNE (§17.4) ABNI 21 (1981) 421

DSAMER (Fortran, 1322). A computer program for nuclear lifetimes measurements by DSAM using a self supporting target. C. Morand, Tsan Ung Chan ABQM 23 (1981) 393

COUNTING FEW RADIOACTIVE ATOMS/3 (Fortran, 97). Counting a small number of radioactive atoms. Monte Carlo program. K.T. Ekholm, A.M. Aurela. Other versions: AAUS (§17.4), AAUY (§17.4) ABQR 29 (1983) 163

LINDA (Fortran, 2963). The code LINDA: a Monte Carlo reaction simulation for correlated fragments and evaporation residues formed in nuclear reactions. E. Duek, L. Kowalski, J.M. Alexander ABPO 34 (1985) 395

CRAZS (Fortran, 1365). A computer program for determining the complete reaction amplitude for two-body nuclear reactions involving zero-spin particles. Z. Basrak. Subroutine required: AATU (§4.9) AATV 46 (1987) 155

TPSPM (Fortran, 470). Determination of the physical scattering matrix from a complete set of ambiguous solutions of the scattering problem by using the shortest-path method. Z. Basrak. Subroutine required: AATV (§17.4) AATW 46 (1987) 179

FEDMIX (Fortran, 14009). Neutron transmission functions and lumped averaged cross-sections from standardized evaluated neutron data (FEDMIX system). P. Vertes ABLF 56 (1989) 199

17.5. Experimental analysis – particle detection

MATCH (Fortran, 3338). A track matching program for bubble chamber photographs. P.L. Bastien, J.N. Snyder, V. Pless ABCB 2 (1971) 394

VBPL (Fortran, 1067). Analysis of photonuclear yield curves by the variable Bin Penfold-Leiss method. P.D. Allen, Su Su, E.G. Muirhead AAVC 21 (1980) 163

SEMIEMPIRICAL ALPHA HALF-LIFE (Fortran, 1511). Alpha-decay half-life semiempirical relationships with self-improving parameters. D.N. Poenaru, M. Ivascu, D. Mazilu ABQQ 25 (1982) 297

CEAN (Fortran, 4505). CEAN: a system for processing coincident data and particle identification. K. Ioannides, P.A. Assimakopoulos AAFB 39 (1986) 245

17.6. Experimental analysis – activity detection

NAA (Fortran, 1344). Computer-assisted analysis of gamma-ray spectra. G.D. Atkinson Jr., J.B. Whitworth, S.J. Gage ABMB 2 (1971) 40

DECAY SCHEME PROGRAM, DCSCH3 (Fortran, 533). A program to aid in establishing gamma-ray decay schemes. B.P. Foster, D.C. Camp ABOF 2 (1971) 288

DECAY SCHEME PROGRAM, DCSCH4 (Fortran, 484). A program to aid in establishing gamma-ray decay schemes. B.P. Foster, D.C. Camp ABOG 2 (1971) 289

INTERNAL CONVERSION COEFFICIENTS (Fortran, 790). A program to calculate internal conversion coefficients for all atomic sheils without screening. O. Dragoun, G. Heuser ABGF 2 (1971) 427

CATAR (Fortran, 3136). A computer program for internal conversion coefficients and particle parameters. H.C. Pauli, U. Raff ABGP 9 (1975) 392

000A CORRECTION 16/08/77 (Fortran). Unpublished correction
Other version: ABMZ (§17.6) ABPG 11 (1976) 75

THDST (Fortran, 1805). A program for calculating gamma-gamma directional correlation coefficients and angular distribution coefficients for gamma rays of mixed multipolarities from partially aligned nuclei. R.J. Rouse Jr., G.L. Struble, R.G. Lanier, L.G. Mann, E.S. Macias. Other version: ABPG (§17.6) ABMZ 15 (1978) 107

INTERNAL CONVERSION COEFFICIENTS (Fortran, 1714). A program to calculate internal conversion coefficients including higher-order corrections for all atomic shells. R. Der, D. Hinneburg, M. Nagel AAMB 18 (1979) 401

CFIT (Fortran, 824). A computer program for determination of nuclear parameters from internal conversion experiments. M. Rysavy, O. Dragoun ABGS 19 (1980) 93

SMUDLA (Fortran, 1579). Nuclear decay scheme construction based on qualitative coincidences. L. Hlavaty AAPB 19 (1980) 197

HFNX (Fortran, 1085). Calculation of (n, gamma) cross-sections and astrophysical reaction rates by the nuclear statistical model. M.J. Harris ABVV 21 (1981) 407

EFFY (Fortran, 419). EFFY: a program to calculate the counting efficiency of beta particles in liquid scintillators. E. Garcia-Torano, A. Grau ABQL 23 (1981) 385

SAMPO80 (Fortran, 2988). SAMPO80: minicomputer program for gamma spectrum analysis with nuclide identification. M.J. Koskelo, P.A. Aarnio, J.T. Routti ABQO 24 (1981) 11

0001 PDP-11 VERSION OF SAMPO80 (Fortran, 2959). SAMPO80: minicomputer program for gamma spectrum analysis with nuclide identification. M.J. Koskelo, P.A. Aarnio, J.T. Routti 24 (1981) 11

ACTIV (Fortran, 5215). ACTIV: a program for automatic processing of gamma-ray spectra. V.B. Zlokazov ABAC 28 (1982) 27

Nuclear physics — *Experimental analysis – activity detection (continued)*

COUNTING FEW RADIOACTIVE ATOMS/3 (Fortran, 97). Counting a small number of radioactive atoms. Monte Carlo program. K.T. Ekholm, A.M. Aurela. Other versions: AAUS (§17.4), AAUY (§17.4) ABQR 29 (1983) 163
DELTA (Fortran, 1975). DELTA: a computer program to analyze gamma-gamma angular correlations from unaligned states. L.P. Ekstrom ACCL 32 (1984) 399
FGM (Fortran, 2171). FGM: a flexible gamma-spectrum analysis program for a small computer. G. Szekely ACDK 34 (1985) 313
EFFY 2 (Fortran, 521). EFFY: a new program to compute the counting efficiency of beta particles in liquid scintillators. E. Garcia-Torano, A. Grau Malonda AABO 36 (1985) 307
VIASKL (Fortran, 902). VIASKL: a computer program to evaluate the liquid scintillation counting efficiency and its associated uncertainty for K-L-atomic shell electron-capture nuclides. J.M. Los Arcos, A. Grau, A. Fernandez AATN 44 (1987) 209
GAMBLE AND GAMANA (Fortran, 4794). Simulation of nuclear quasicontinuum gamma-ray spectra. G.A. Leander ABBF 47 (1987) 311
EFYGA (Fortran, 523). EFYGA: a Monte Carlo program to compute the interaction probability and the counting efficiency of gamma rays in liquid scintillators. E. Garcia-Torano, A. Grau Malonda ABBC 47 (1987) 341

17.7. Experimental analysis – fission, fusion, heavy-ion

NAA (Fortran, 1344). Computer-assisted analysis of gamma-ray spectra. G.D. Atkinson Jr., J.B. Whitworth, S.J. Gage ABMB 2 (1971) 40
DECAY SCHEME PROGRAM, DCSCH3 (Fortran, 533). A program to aid in establishing gamma-ray decay schemes. B.P. Foster, D.C. Camp ABOF 2 (1971) 288
DECAY SCHEME PROGRAM, DCSCH4 (Fortran, 484). A program to aid in establishing gamma-ray decay schemes. B.P. Foster, D.C. Camp ABOG 2 (1971) 289
E-DEP-1 (Fortran, 2047). Depth distribution of energy deposition by ion bombardment. I. Manning, G.P. Mueller ACIB 7 (1974) 85
0001 CALCULATE LATERAL RANGES (Fortran, 68). Adaptation of a program for depth distribution of energy deposition by ion bombardment: calculation of ion lateral ranges. I. Manning, M. Rosen, J.E. Westmoreland 12 (1976) 335
000A CORRECTION 21/09/75 (Fortran) 12 (1976) 339
000B CORRECTION 5/03/75 (Fortran) 12 (1976) 339
0002 BETTER STOPPING POWERS (Fortran, 2912). Adaptation of a program for depth distribution of energy deposition by ion bombardment: better stopping powers. C.M. Davisson, I. Manning 42 (1986) 137
SMUDLA (Fortran, 1579). Nuclear decay scheme construction based on qualitative coincidences. L. Hlavaty AAPB 19 (1980) 197
FRANPIE (Fortran, 1345). The code FRANPIE: a semiclassical friction free model for calculating excitation functions for complete fusion of heavy ions. L.C. Vaz ABPK 22 (1981) 451
ASYM (Fortran, 217). ASYM: a program to examine fission fragment mass asymmetry in hemispherical chambers. R.S. Tanczyn, G.P. Couchell, W.A. Schier AADD 38 (1985) 61
CEAN (Fortran, 4505). CEAN: a system for processing coincident data and particle identification. K. Ioannides, P.A. Assimakopoulos AAFB 39 (1986) 245
TCNT (Fortran, 456). Exact calculation of the penetrability through triple hump fission barriers. G.D. James AAFT 40 (1986) 375
FREESCO (Fortran, 1753). FREESCO: statistical event generator for nuclear collisions. G. Fai, J. Randrup AALV 42 (1986) 385
CCFUS (Fortran, 337). CCFUS: a simplified coupled-channel code for calculation of fusion cross sections in heavy-ion reactions. C.H. Dasso, S. Landowne AATM 46 (1987) 187
NUCFRAG (Fortran, 944). An algorithm for a semiempirical nuclear fragmentation model. F.F. Badavi, L.W. Townsend, J.W. Wilson, J.W. Norbury ABBG 47 (1987) 281
TORINO (Fortran, 2427). TORINO: a semiclassical coupled channel code for heavy ion reactions. C.H. Dasso, G. Pollarolo ABDB 50 (1988) 341
XRAY (Fortran, 1510). Fusion cross sections from measurements of delayed X-rays. A.J. Pacheco, D.E. DiGregorio, J.O. Fernandez Niello, M. Elgue ABFL 52 (1988) 93
KALLIOPI (Fortran, 2938). A Monte Carlo reaction simulation for small-angle correlations between light charged particles. R.L. McGrath, A. Elmaani, J.M. Alexander, P.A. DeYoung, T. Ethvignot, M.S. Gordon, E. Renshaw ABRU 59 (1990) 507

17.8. Nuclear reaction – general

DATA FOR ABOM (Fortran, 12980). Kinematical parameters of nuclear reactions. A. Wolfram, C.F. Moore, W.R. Coker AAA* 2 (1971) 443

NUCLEAR SPECTRA (Fortran, 603). Kinematical parameters of nuclear reactions. A. Wolfram, C.F. Moore, W.R. Coker. Subroutine required (for data): AAA* (§17.8) ABOM 2 (1971) 443
EFFECTIVE RANGE APPROXIMATION (Fortran, 388). The two-nucleon effective-range parameters with tensor forces. L. Lovitch, S. Rosati. Subroutines required: ABGE (§4.3), ABGE0001 ABGJ 4 (1972) 138
TWOBDY (Fortran, 185). Relativistic kinematics for two-body final states. W.J. Braithwaite ABOS 4 (1972) 227
BODY3 (Fortran, 128). Relativistic kinematics for three-body final states. W.J. Braithwaite ABOT 4 (1972) 233
S 1/2 PARTICLE CS AND POL (Fortran, 356). Computation of cross sections and polarizations for nuclear reactions, in which only spin 1/2 particles are involved. P. Heiss ABGK 4 (1972) 371
Other version: AAJE (§17.8) ACRL 5 (1973) 456
FATSO (Fortran, 1834). A program calculating the formulae for polarization effects in nuclear reactions. F. Seiler ABGM 6 (1973) 229
PAKINE3 (Fortran, 368). Kinematics of three-body reactions. P.A. Assimakopoulos ABMO 10 (1975) 385
PAKIPLOT (Fortran, 220). Kinematics of three-body reactions. P.A. Assimakopoulos ABMP 10 (1975) 385
FRICTION (Fortran, 554). One-dimensional wave packet solutions of time-dependent frictional or optical potential Schrodinger equations. R.W. Hasse ACWT 11 (1976) 353
DCS2 (Fortran, 2661). New version of program for calculating differential and integral cross sections for quantum mechanical scattering problems from reactance or transition matrices. K. Onda, D.G. Truhlar, M.A. Brandt. Other versions: ACRL (§17.8), ACRL0001 AAJE 21 (1980) 97
LORNA (Fortran, 2981). Analysis of polarization experiments. J. Nurzynski AABM 36 (1985) 295
CRAZS (Fortran, 1365). A computer program for determining the complete reaction amplitude for two-body nuclear reactions involving zero-spin particles. Z. Basrak. Subroutine required: AATU (§4.9) AATV 46 (1987) 155
TPSPM (Fortran, 470). Determination of the physical scattering matrix from a complete set of ambiguous solutions of the scattering problem by using the shortest-path method. Z. Basrak. Subroutine required: AATV (§17.8) AATW 46 (1987) 179
JADJAD (Fortran, 1206). JADJAD: simulation of inelastic nucleus-nucleus interactions below 5GeV. H.N. Agakishiev, V.G. Grishin, K. Hanssgen, T. Kanarek, R.M. Mechtiev. Subroutines required: AADO (§11.2), AADN (§11.2), ACFS (§11.2) ABBK 48 (1988) 391
FEDMIX (Fortran, 14009). Neutron transmission functions and lumped averaged cross-sections from standardized evaluated neutron data (FEDMIX system). P. Vertes ABLF 56 (1989) 199
NUCOGE (Fortran, 865). A Monte Carlo for nuclear collision geometry. L. Ding, E. Stenlund ABRO 59 (1990) 313

17.9. Optical models

REGGE TRAJECTORY (Fortran, 1187). A program for calculating Regge trajectories in potential scattering. P.G. Burke, C. Tate AAGA 1 (1969) 97
SCAT (Fortran, 340). Nuclear penetrability and phase shift subroutine. W.R. Smith ACQF 1 (1969) 106
0002 ADAPT SCAT TO LIANA (Fortran, 13). Adaptation of subroutine SCAT for use with program LIANA. W.R. Smith 1 (1970) 181
0001 ADAPT SCAT TO ELASTIC (Fortran, 12). Adaptation of subroutine SCAT for use with program ELASTIC. W.R. Smith 1 (1970) 198
ELASTIC (Fortran, 290). Nuclear elastic scattering program with parameter search. W.R. Smith. Subroutines required: ABOD (§4.9), ABOD0001, ACQF (§17.9), ACQF0001 ACQG 1 (1970) 198
PHASESHIFT ANALYSIS (Fortran, 1796). A program to calculate complex phase shifts and mixing parameters of elastic scattering of spin 1/2 particles on spin 1/2 targets. R. Kankowsky, D. Fick ABGB 2 (1971) 223
OPTICS (Fortran, 3344). A nuclear optical model code for small computers. R.J. Eastgate, W.J. Thompson, R.A. Hardekopf. Other version: ACRR (§17.9) ABOU 5 (1973) 69
OPTIX KSU1 (Fortran, 3660). A version of a nuclear optical model code for small computers designed to run on a PDP-15. S.K. Datta, W.J. Thompson, D.O. Elliott. Other version: ABOU (§17.9) ACRR 7 (1974) 343
PATIWEN (Fortran, 1256). PATIWEN – a code for Coulomb-nuclear interference calculations. D.H. Feng, A.R. Barnett. Subroutines required: ABPC (§4.5), ABPC0001 ABPD 10 (1976) 401
A-THREE (Fortran, 3571). A-THREE: a general optical model code especially suited to heavy-ion calculations. E.H. Auerbach. Subroutine required: ABPC (§4.5) ABII 15 (1978) 165
REGGE (Fortran, 1914). Complex angular momentum methods for elastic scattering with an optical potential. T. Takemasa, T. Tamura, H.H. Wolter ABNF 18 (1979) 427
FYPEDIFC (Fortran, 1359). Folded Yukawa-plus-exponential model PES for nuclei with different charge densities. D.N. Poenaru, M. Ivascu, D. Mazilu ABQH 19 (1980) 205

Nuclear physics — *Optical models (continued)*

NONLOCAL POTENTIALS (Fortran, 1017). A spline function program for treating nonlocal potentials. H.R. Fiebig — ABQK 23 (1981) 135
PCNUM (Fortran, 829). A program for the predictor-corrector Numerov method. W.E. Baylis, S.J. Peel — AARJ 25 (1982) 21
DFPOT (Fortran, 964). DFPOT: a program for the calculation of double folded potentials. J. Cook — ABQP 25 (1982) 125
RIHIOP (Fortran, 1918). Real and imaginary part of the heavy ion optical potential from a realistic nucleon-nucleon interaction. A. Faessler, L. Rikus, R. Sartor — ABPL 28 (1983) 275
HERMES (Fortran, 3805). HERMES: an optical model search program including tensor potentials for projectile spins 0 to 3/2. J. Cook — ABPM 31 (1984) 363
LPOTp (Fortran, 8111). LPOTp: nucleon elastic-scattering from spin 0 and 1/2 nuclei in momentum space. M.J. Paez, M.E. Sagen, R.H. Landau — ABDD 52 (1988) 141
NPSD (Fortran, 955). Solution of the two nucleons Schrodinger equation with nonlocal tensor potential in the 3S1-3D1 state. M.M. Mustafa, M.W. Kermode, E.S. Zahran — ABJH 55 (1989) 109

17.10. Compound nucleus

MANDY (Algol, 1273). Computation of total, differential, and double-differential cross sections for compound nuclear reactions of the type (a,b), (a,bgamma) and (a,bgamma-gamma) (II) Generalized programs MANDY and BARBARA for arbitrary angular momenta in Hauser-Feshbach-Moldauer formalism. See erratum Comput. Phys. Commun. 1 (1970) 224. E. Sheldon, R.M. Strang. Other versions: ABOJ (§17.10), ABMF (§17.10) — ABOA 1 (1969) 35
000A CORRECTION 23/04/71 (Algol) — 2 (1971) 278
BARBARA (Algol, 1219). Computation of total, differential, and double-differential cross sections for compound nuclear reactions of the type (a,b), (a,bgamma) and (a,bgamma-gamma) (II) Generalized programs MANDY and BARBARA for arbitrary angular momenta in Hauser-Feshbach-Moldauer formalism. See erratum Comput. Phys. Commun. 1 (1970) 224. E. Sheldon, R.M. Strang. Other version: ABOK (§17.10) — ABOB 1 (1969) 37
000A CORRECTION 23/04/71 (Algol) — 2 (1971) 278
LIANA (Fortran, 571). Hauser-Feshbach nuclear scattering subroutine LIANA. W.R. Smith. Subroutines required: ACQF (§17.9), ACQF0002 — ABKA 1 (1970) 181
Other versions: ABOA (§17.10), ABMF (§17.10) — ABOJ 2 (1971) 272
BARBYF (Fortran, 1382). Computation of total, differential and double-differential cross sections for compound nuclear reactions of the type (a,b), (a,bgamma) and (a,bgamma-gamma). (III) FORTRAN translations of the ALGOL programs MANDY and BARBARA. E. Sheldon, S. Mathur, D. Donati. Other version: ABOB (§17.10) — ABOK 2 (1971) 274
000A CORRECTION 17/10/72 (Fortran) — 5 (1973) 304
CINDY (Fortran, 2367). Computation of total and differential cross sections for compound nuclear reactions of the type (a,a), (a,a'), (a,b), (a,gamma), (a,gamma-gamma), (a,bgamma) and (a,bgamma-gamma). (IV) Fortran program CINDY. E. Sheldon, V.C. Rogers. Other versions: ABOA (§17.10), ABOJ (§17.10) — ABMF 6 (1973) 99
000A CORRECTION 4/01/74 (Fortran). Unpublished correction
MIA (Fortran, 1360). MIA, a FORTRAN-IV program for making spin and parity assignments to high-lying single and coherent twin nuclear levels from (alpha, nucleon) angular distributions in on-resonance, compound-nuclear, channel-spin-1/2 reactions. E. Sheldon, D.R. Donati, H.R. Hiddleston — ABMI 8 (1974) 199
REFERENCE REACTION MATRIX (Fortran, 1000). Matrix elements of the reaction matrix in finite nuclei. R.J.W. Hodgson. Subroutine required: ABIF (§17.10) — ABIE 11 (1976) 113
REACTION MATRIX (Fortran, 2053). Matrix elements of the reaction matrix in finite nuclei. R.J.W. Hodgson. Subroutine required: ABIE (§17.10) — ABIF 11 (1976) 113
CARLA (Fortran, 1101). CARLA: a code to calculate the population of high spin states through compound nucleus reactions. C. Savelli, M. Morando — ABGQ 15 (1978) 283

17.11. Direct reactions

DWBA-VENUS (Fortran, 4034). Distorted wave Born approximation for nuclear reactions. T. Tamura, W.R. Coker, F. Rybicki — ABOH 2 (1971) 94
000A CORRECTION 01/03/72 (Fortran) — 3 (1972) 275
FINITE RANGE DWBA PHASE 1 (Fortran, 1539). FORTRAN program to calculate finite-range no-recoil DWBA transfer cross sections. G.L. Payne, P.L. von Behren — ABOW 7 (1974) 13

Nuclear physics — *Direct reactions (continued)*

FINITE RANGE DWBA PHASE 2 (Fortran, 1590). FORTRAN program to calculate finite-range no-recoil DWBA transfer cross sections. G.L. Payne, P.L. von Behren. Subroutine required: ABOW (§17.11) ABOX 7 (1974) 13
SATURN-1-FOR-EFR-DWBA (Fortran, 2509). Exact finite range DWBA calculations for heavy-ion induced nuclear reactions. T. Tamura, K.S. Low. Subroutine required: ABPB (§17.11) ABPA 8 (1974) 349
0001 SATURN-2-FOR-EFR-DWBA (Fortran, 869). Exact finite range DWBA form factor for heavy-ion induced nuclear reactions. T. Tamura, T. Udagawa, K.E. Wood, H. Amakawa 18 (1979) 163
A00A CORRECTION TO 0001 19/02/87 (Fortran) 44 (1987) 227
MARS-1-FOR-EFR-DWBA (Fortran, 2175). Exact finite range DWBA calculations for heavy-ion induced nuclear reactions. T. Tamura, K.S. Low. Subroutine required: ABPA (§17.11) ABPB 8 (1974) 349
COCHASE (Fortran, 1358). COCHASE, a code for coupled channel Schrodinger equations. S. Hirschi, E. Lomon, N. Spencer ABIC 9 (1975) 11
QUASI-BOUND STATE WAVEFUNCTIONS (Fortran, 628). Quasi-bound state wavefunctions. R.M. DeVries ABMQ 11 (1976) 249
SATTNT-FOR-EFR-MICRO-DWBA (Fortran, 3158). Exact-finite-range microscopic calculations for heavy-ion induced two-nucleon transfer reactions. D.H. Feng, B.T. Kim, T. Udagawa, T. Tamura, K.S. Low ABMU 12 (1976) 293
DAISY (Fortran, 1973). DWBA program for heavy ion transfer reactions. P.J.A. Buttle ABMY 14 (1978) 133
FRCCBAOUKID (Fortran, 3220). A finite range coupled channel Born approximation code. P. Nagel, R.D. Koshel ABPI 15 (1978) 193
ORION-TRISTAR-1 (Fortran, 3471). DWBA calculations of continuum spectra of nuclear reactions. T. Tamura, T. Udagawa, M. Benhamou ABNL 29 (1983) 391
SPECTO (Fortran, 2129). A program for calculating spectroscopic amplitudes for two-nucleon transfer reactions by projecting angular momentum. T. Takemasa ACDX 36 (1985) 79
TORINO (Fortran, 2427). TORINO: a semiclassical coupled channel code for heavy ion reactions. C.H. Dasso, G. Pollarolo ABDB 50 (1988) 341
CCDEF (Fortran, 458). CCDEF: a simplified coupled channel code for fusion cross sections including static nuclear deformations. J. Fernandez-Niello, C.H. Dasso, S. Landowne ABFM 54 (1989) 409
GARDEL (Fortran, 4057). Microscopic inelastic form-factors for heavy-ion reactions. A. Etchegoyen, M.C. Etchegoyen ABJE 55 (1989) 217

17.12. Pre-equilibrium decay

PREEQ (Fortran, 816). Program for spectra and cross-section calculations within the pre-equilibrium model of nuclear reactions. E. Betak ABGO 9 (1975) 92
000A CORRECTION 16/5/75 (Fortran) 10 (1975) 71
EMPIRE (Fortran, 3615). A program for calculation of spectra and cross sections within the combined pre-equilibrium compound nucleus model of nuclear reactions. M. Herman, A. Marcinkowski, K. Stankiewicz ACCQ 33 (1984) 373

17.13. Coulomb excitation, electron scattering

ITER (Fortran, 484). Calculation of electric quadrupole radial matrix elements for Coulomb excitation. M. Samuel, U. Smilansky ABQC 2 (1971) 455
DXS1 (Fortran, 1172). Differential cross sections for electric quadrupole Coulomb excitation I. S.M. Lea, V. Joshi, A.B. Lopez-Cepero ABQE 3 (1972) 118
AROSA-FOR-COULOMB-EXCITATION-I (Fortran, 1686). Quantum mechanical coupled channels code for Coulomb excitation. F. Rosel, J.X. Saladin, K. Alder. Subroutine required: ABOZ (§17.13) ABOY 8 (1974) 35
AROSA-FOR-COULOMB-EXCITATION-II (Fortran, 751). Quantum mechanical coupled channels code for Coulomb excitation. F. Rosel, J.X. Saladin, K. Alder. Subroutine required: ABOY (§17.13) ABOZ 8 (1974) 35
VPSPEC (Fortran, 180). Exact PWBA virtual photon spectrum for A(gammaV,D)R. L. Tiator, L.E. Wright AAOQ 28 (1983) 265
SOVPS (Fortran, 1424). A program to calculate virtual photon spectrum in second order Born approximation. P. Durgapal, D.S. Onley ABPN 32 (1984) 291
VPS (Fortran, 1825). Calculation of the virtual photon spectrum for a finite nucleus in distorted wave method. F. Zamani-Noor, D.S. Onley ABBR 48 (1988) 241
RADTAIL (Fortran, 2968). The radiation tail accompanying elastic electron scattering from the atomic nucleus. I. Talwar, L.E. Wright ABJV 55 (1989) 367
CEFEUSK (Fortran, 402). K-matrix calculation for general nonlocal potentials. J. Horacek, J. Bok ABRP 59 (1990) 319

DPDE (Fortran, 7339). PC-Fortran programs for muon reactivation calculations in muon-catalyzed fusion. H.E. Rafelski, B. Muller — ABRQ 59 (1990) 521

17.14. Medium energy reactions

Other version: AAWC (§17.14) — ABCJ 8 (1974) 130
Other version: AAWD (§17.14) — ABIG 11 (1976) 95
PIPIT (Fortran, 1684). PIPIT: a momentum space optical potential code for pions. See erratum Comput. Phys. Commun. 13 (1977) 141. R.A. Eisenstein, F. Tabakin — ABIH 12 (1976) 237
PIRK 2 (Fortran, 822). A new version of PIRK (elastic pion-nucleus scattering) to handle differing proton and neutron radii. H.O. Funsten. Other version: ABCJ (§17.14) — AAWC 16 (1979) 389
DWPI 2 (Fortran, 1090). A new version of DWPI (inelastic pion-nucleus scattering) to incorporate microscopic form factors and differing proton and neutron radii. H.O. Funsten. Subroutine required: AAWC (§17.14). Other version: ABIG (§17.14) — AAWD 16 (1979) 395
LPOTT (Fortran, 6585). LPOTT: pion and kaon elastic scattering from spin 1/2 nuclei in momentum space. R.H. Landau — AAVL 28 (1982) 109

17.15. Spectroscopy – level scheme

RITZ COMBINATION PRINCIPLE (Fortran, 113). Program for fitting transition energies into a level scheme according to the combination principle. I.R. Williams — ABKD 1 (1970) 465
Other version: ABMZ (§17.15) — ABPG 11 (1976) 75
THDST (Fortran, 1805). A program for calculating gamma-gamma directional correlation coefficients and angular distribution coefficients for gamma rays of mixed multipolarities from partially aligned nuclei. R.J. Rouse Jr., G.L. Struble, R.G. Lanier, L.G. Mann, E.S. Macias. Other version: ABPG (§17.15) — ABMZ 15 (1978) 107
CARLA (Fortran, 1101). CARLA: a code to calculate the population of high spin states through compound nucleus reactions. C. Savelli, M. Morando — ABGQ 15 (1978) 283
ACOEFF (Fortran, 1403). Perturbation functions: PAC probe nuclei, I=2, 5/2, and 3. G.L. Catchen — ABJM 55 (1989) 85

17.16. Theoretical methods – general

MIXING (Fortran, 646). Electromagnetic M1 reduced transition probabilities for pure and mixed Nilsson states in odd-A nuclei. E. Browne, F.R. Femenia — ABQB 2 (1971) 331
SCHROD (Fortran, 138). Numerical solution of the radial Schrodinger equation. F. Beleznay — ACQZ 3 (1972) 334
AROVMI (Fortran, 493). Energy level calculations with Arovmi model. S.M. Abecasis, F.R. Femenia — ABMC 4 (1972) 262
YUKAWA/RH**LP D JL 72 (Fortran, 433). Nearly exact calculation of the solution of the radial Schrodinger equation. L. Marquez — AAGN 5 (1973) 379
EXTARO (Fortran, 639). Energy-level calculations with the extended Arovmi model. S.M. Abecasis, F.R. Femenia. Subroutine required: ABOE (§17.20) — ABMG 7 (1974) 145
MIA (Fortran, 1360). MIA, a FORTRAN-IV program for making spin and parity assignments to high-lying single and coherent twin nuclear levels from (alpha, nucleon) angular distributions in on-resonance, compound-nuclear, channel-spin-1/2 reactions. E. Sheldon, D.R. Donati, H.R. Hiddleston — ABMI 8 (1974) 199
OSCI (Fortran, 613). Bound-states of one nucleon in a Woods-Saxon well from a variational method. J.M. Delbrouck-Habaru, D.M. Dubois — ABMJ 8 (1974) 396
DOMUS (Fortran, 2596). DOMUS: a program for the analysis of two-dimensional spectra. V.B. Zlokazov — ABAB 18 (1979) 281
FYPEDIFC (Fortran, 1359). Folded Yukawa-plus-exponential model PES for nuclei with different charge densities. D.N. Poenaru, M. Ivascu, D. Mazilu — ABQH 19 (1980) 205
HFNX (Fortran, 1085). Calculation of (n, gamma) cross-sections and astrophysical reaction rates by the nuclear statistical model. M.J. Harris — ABVV 21 (1981) 407
COMMUTE (Fortran, 5238). Manual for COMMUTE, a Fortran program for symbolic evaluation of commutators and correlation functions. H. De Raedt, J. Fivez, B. De Raedt — ACKS 23 (1981) 209
PCNUM (Fortran, 829). A program for the predictor-corrector Numerov method. W.E. Baylis, S.J. Peel — AARJ 25 (1982) 21
CASEIG (Fortran, 249). Computation of Casimir operator eigenvalues. A.K. Bose — AARX 28 (1983) 271
SU2DIMPH (Fortran, 1013). Model space dimensionalities for multiparticle fermion systems. J.P. Draayer, H.T. Valdes — AABN 36 (1985) 313
SCHROD (Fortran, 438). A program for the calculation of energy eigenvalues and eigenstates of a Schrodinger equation. V. Fack, G. Vanden Berghe — AADV 39 (1986) 187

RWSYST (Fortran, 1868). RWSYST: a filing system for coefficients and eigenvectors. S. Kossionides, L.D. Skouras AAFC 39 (1986) 213
ICAR AND CONV (Fortran, 1883). Codes for the combinatorial calculation of few quasiparticle state densities in spherical and deformed nuclei. M. Herman, G. Reffo AAXS 47 (1987) 103
GAMBLE AND GAMANA (Fortran, 4794). Simulation of nuclear quasicontinuum gamma-ray spectra. G.A. Leander ABBF 47 (1987) 311
PHISYM (Reduce, 261). An algebraic program for the states associated with the U(5) include O(5) include O(3) chain of groups. C. Yannouleas, J.M. Pacheco ABFN 52 (1988) 85
DIAGEN (Fortran, 574). DIAGEN: generator of inelastic nucleus-nucleus interaction diagrams. S.Yu. Shmakov, V.V. Uzhinskii, A.M. Zadorozhny ABHP 54 (1989) 125
PHIMANIP (Reduce, 665). Algebraic manipulation of the states associated with the U(5) include O(5) include O(3) chain of groups: orthonormalization and matrix elements. C. Yannouleas, J.M. Pacheco. Subroutine required: ABFN (§17.16) ABJA 54 (1989) 315
TBINT (Fortran, 1478). Evaluation of Hamiltonian two-body matrix elements. A. Etchegoyen, M.C. Etchegoyen, E.G. Vergini ABJF 55 (1989) 227

17.17. Oscillator brackets

BRODY-MOSHINSKY BRACKETS (Fortran, 579). Computation of Brody-Moshinsky brackets. A. Lejeune, J.P. Jeukenne. Subroutine required: ABMA (§4.1) ABGC 2 (1971) 231
OSCILLATOR BRACKETS (Fortran, 412). Generalized transformation brackets for the harmonic oscillator functions. M. Sotona, M. Gmitro ABGH 3 (1972) 53
TALMI (Fortran, 964). A Fortran program for the computation of the generalized Talmi coefficients. O. Zohni ABGG 3 (1972) 61
000A CORRECTION 16/12/86 (Fortran). Unpublished correction
OSCILLATOR BRACKET (Fortran, 954). Calculations of harmonic oscillator brackets. D.H. Feng, T. Tamura ABPE 10 (1975) 87
TAMOBR (Fortran, 609). Calculations of generalized harmonic oscillator brackets. J. Dobes ABGR 16 (1979) 373

17.18. Coefficients of fractional parentage – SU(3)

JJTCFP (Fortran, 714). Coefficients of fractional parentage in j-j coupling in the isospin representation. L.B. Hubbard ABKB 1 (1970) 225
JNTJN (Fortran, 204). Allowed values of coupled angular momentum and i-spin for nucleons in a single shell in j-j coupling. L.B. Hubbard ABKC 1 (1970) 453
1PSHELL SU3 FRACTIONAL PARENTAGE (Fortran, 1468). SU3 fractional parentage in the 1p-shell. J. Meyer, R.S. Nahabetian, J. Joseph, J. Lafoucriere ABOL 2 (1971) 420
DATA FOR ABKG (Fortran, 7423). Reduced SU(3) CFP'S. D. Braunschweig AAC* 14 (1978) 109
REDUCED SU(3) CFPS (Fortran, 3655). Reduced SU(3) CFP'S. D. Braunschweig. Subroutine required (for data): AAC* (§17.18) ABKG 14 (1978) 109
REDUCED SU(3) MATRIX ELEMENTS (Fortran, 907). II. Reduced SU(3) matrix elements. D. Braunschweig. Subroutines required: ABKG (§17.18), AAC* (§17.18) ABKH 15 (1978) 259
GFPC1 (Fortran, 1579). Generalized fractional parentage coefficients for shell-model calculations. L.D. Skouras, S. Kossionides. Subroutine required: AAFC (§17.18) AADX 39 (1986) 197
GFPCM (Fortran, 1156). Generalized fractional parentage coefficients for shell-model calculations. L.D. Skouras, S. Kossionides. Subroutine required: AAFC (§17.18) AADY 39 (1986) 197
RWSYST (Fortran, 1868). RWSYST: a filing system for coefficients and eigenvectors. S. Kossionides, L.D. Skouras AAFC 39 (1986) 213
ROTXSU3 (Fortran, 1380). Quantum rotor and its SU(3) realization. O. Castanos, J.P. Draayer, Y. Leschber ABFO 52 (1988) 71

17.19. Shell model – one-body problem, spectra

BOUND (Fortran, 372). Nuclear bound state wave function subroutine. W.R. Smith ACQA 1 (1969) 55
DEUT (Fortran, 968). Bound state solution of the two-nucleon Schroedinger equation with tensor forces. L. Lovitch, S. Rosati ABGE 2 (1971) 353
0001 REMOVE NON-STANDARD FORTRAN (Fortran, 138). Bound state solution of the two-nucleon Schroedinger equation with tensor forces. L. Lovitch, S. Rosati 4 (1972) 140

YUKAWA/RH**LP D JL 72 (Fortran, 433). Nearly exact calculation of the solution of the radial Schrodinger equation. L. Marquez AAGN 5 (1973) 379
BSSW (Fortran, 300). Computation of S-state binding energy and wave functions in a Saxon-Woods potential. J. Cugnon ABGL 6 (1973) 17
NILSSON ORBITS (Fortran, 827). Nilsson orbits for a particle in a Woods-Saxon potential with Y20 and Y40 deformations, and coupled to core rotational states. B. Hird. Subroutine required: ABMA (§4.1) ABOV 6 (1973) 30
WSMCC (Fortran, 5695). Weizmann shell model computational code. R. Gross, Y. Accad. Subroutine required (for data): ABKB (§17.18) ABGN 8 (1974) 101
OSCI (Fortran, 613). Bound-states of one nucleon in a Woods-Saxon well from a variational method. J.M. Delbrouck-Habaru, D.M. Dubois ABMJ 8 (1974) 396
NUCLEAR POTENTIAL (Fortran, 1357). Solution of bound state problems in nuclear shell model with momentum dependent potentials. M.A.K. Lodhi, B.T. Waak ACWK 10 (1975) 182
QUASI-BOUND STATE WAVEFUNCTIONS (Fortran, 628). Quasi-bound state wavefunctions. R.M. DeVries ABMQ 11 (1976) 249
PSEUDO (Fortran, 2033). Resonant or bound state solution of the Schrodinger equation in deformed or spherical potential. A.T. Kruppa, Z. Papp ACDZ 36 (1985) 59
RITSSCHIL (Fortran, 3400). RITSSCHIL: a new program for shell-model calculations. D. Zwarts AADA 38 (1985) 365
ICAR AND CONV (Fortran, 1883). Codes for the combinatorial calculation of few quasiparticle state densities in spherical and deformed nuclei. M. Herman, G. Reffo AAXS 47 (1987) 103
ROTXSU3 (Fortran, 1380). Quantum rotor and its SU(3) realization. O. Castanos, J.P. Draayer, Y. Leschber ABFO 52 (1988) 71

17.20. Collective model

ENERGY LEVELS IN DAVYDOV MODEL (Fortran, 1326). Energy level calculations in Davydov model. S.M. Abecasis, F.R. Femenia, E.S. Hernandez ABOE 2 (1971) 33
MIXING (Fortran, 646). Electromagnetic M1 reduced transition probabilities for pure and mixed Nilsson states in odd-A nuclei. E. Browne, F.R. Femenia ABQB 2 (1971) 331
NILSSON ORBITS (Fortran, 827). Nilsson orbits for a particle in a Woods-Saxon potential with Y20 and Y40 deformations, and coupled to core rotational states. B. Hird. Subroutine required: ABMA (§4.1) ABOV 6 (1973) 30
DEFORMED QUASIPARTICLES (Fortran, 948). Deformed quasiparticle states in a Woods-Saxon potential and coupled to rotational states of the core. B. Hird, K.H. Huang. Subroutine required: ABMA (§4.1) ABPF 10 (1975) 293
CORIOL (Fortran, 390). A computer program for calculation of the Coriolis effect in odd-A nuclei. R. Kaczarowski. Subroutine required: ACWH (§4.9) ABQF 13 (1977) 63
LIQUID DROP DEFORMATION ENERGIES (Fortran, 462). Liquid drop model deformation energies of nuclei with axial symmetry and reflection asymmetry. D.N. Poenaru, M. Ivascu ABQG 16 (1978) 85
ODDODDCORI (Fortran, 1204). A program for calculation of the Coriolis effect in odd-odd nuclei. Z. Hons, J. Kvasil. Subroutine required: ACWH (§4.9) AARA 24 (1981) 161
INVAP (Fortran, 767). Initial values of parameters for variable moment of inertia models. G.S. Anagnostatos, K. Demakos, A. Vassiliou ABQN 24 (1981) 197
NUDENS (Fortran, 15611). NUDENS: a Nilsson-Bardeen-Cooper-Schrieffer code at finite nuclear temperature. G. Maino, M. Vaccari, A. Ventura. Other version: AALW (§17.20) ABQS 29 (1983) 375
CORIOP (Fortran, 1980). A program for calculation of the E1, E2 and M1 transition probabilities in odd-odd nuclei taking the Coriolis mixing into account. Z. Hons, J. Kvasil. Subroutine required: ACWH (§4.9) ABQT 30 (1983) 59
PSEUDO (Fortran, 2033). Resonant or bound state solution of the Schrodinger equation in deformed or spherical potential. A.T. Kruppa, Z. Papp ACDZ 36 (1985) 59
NUCPAR (Fortran, 2008). NUCPAR: a parity-dependent NBCS formalism at finite nuclear temperature. G. Maino, A. Ventura. Subroutine required (for data): ABQS (§17.20). Other version: ABQS (§17.20) AALW 43 (1987) 303
WSBETA (Fortran, 4617). Single particle energies, wave functions, quadrupole moments, and g-factors in axially deformed Woods-Saxon potential with applications in the two-centre-type nuclear problems. S. Cwiok, J. Dudek, W. Nazarewicz, J. Skalski, T.R. Werner AAXX 46 (1987) 379
PARTICLE-VIBRATION COUPLING (Fortran, 1926). Particle-vibration coupling model for odd-A nuclei. R.D. Purrington ABLP 58 (1990) 211

Nuclear physics *(continued)*

17.21. Cluster model

FOURBODY (Fortran, 467). Rapid evaluation of four-body cluster contributions. G.P. Mueller — ABIA 2 (1971) 214
Other version: AAOY (§17.21) — AARQ 25 (1982) 237
DFIDTH (Fortran, 269). Program package for calculating matrix elements of two-cluster structures in nuclei. R. Krivec, M.V. Mihailovic — AAOG 28 (1982) 153
STOKER (Fortran, 1000). Program package for calculating matrix elements of two-cluster structures in nuclei. R. Krivec, M.V. Mihailovic — AAOH 28 (1982) 153
PRO2C (Fortran, 2246). Program package for calculating matrix elements of two-cluster structures in nuclei. R. Krivec, M.V. Mihailovic. Subroutines required: AAOG (§17.21), AAOH (§17.21) — AAOI 28 (1982) 153
NUCADA (Fortran, 2979). NUCADA: two adaptations of the system NUCORE for nuclear structure calculations. C.A. Heras, S.M. Abecasis. Subroutine required: ACWH (§4.9). Other version: AARQ (§17.21) — AAOY 29 (1983) 73

17.22. Hartree–Fock calculations

HARFOCK (Fortran, 662). Hartree–Fock nuclear calculations with gaussian potentials. J.F. Allard, A. Abzouzi, B. Houssais — ABGD 3 (1972) 22
PROJ (Fortran, 1098). A nuclear Hartree–Fock intrinsic wavefunction projection program. J.F. Allard, N. Boumahrat, B. Houssais, M. Hadj Hassan, M. Lambert — ABGI 4 (1972) 239

18. Optics

KRKRAN (Fortran, 583). Kramers – Kronig analysis of reflection data. R. Klucker, U. Nielsen — ACKD 6 (1973) 187
COLOUR COORDINATE CALCULATIONS (Fortran, 383). Colour coordinate calculations. D.L. Bradly, R. Perrin — ACWA 9 (1975) 305
KRONIG (Fortran, 101). Numerical solution of Kramers-Kronig transforms by a Fourier method. S.J. Collocott — ACMN 13 (1977) 203
0001 TRAPZAL (Fortran, 15). Adaptation: numerical solution of the Kramers-Kronig transforms by trapezoidal summation as compared to a Fourier method. S.J. Collocott, G.J. Troup — 17 (1979) 393
ELLIPS (Fortran, 1209). ELLIPS: a Fortran simulation of a polarization-modulation ellipsometer. V.M. Bermudez — ACXK 13 (1977) 207
FREINT (Fortran, 346). FREINT: an integration routine calculating Fresnel diffraction. W.J. Gruschel — ACUB 16 (1979) 175
000A CORRECTION 27/11/78 (Fortran). Unpublished correction
SLAM (Fortran, 1121). SLAM: vectorized calculation of refraction and reflection for a Gaussian beam at a nonlinear interface in the presence of a diffusive Kerr-like nonlinearity. D.R. Andersen, R. Cuykendall, J.J. Regan — ABBT 48 (1988) 255

19. Plasma physics

19.1. Atomic and molecular processes

HYDROGENIC RECOMBINATION COEFFS (Fortran, 306). A program to calculate radiative recombination coefficients of hydrogenic ions. D.R. Flower, M.J. Seaton — ACQD 1 (1969) 31
COLLRAD (Fortran, 1347). COLLRAD: a code for calculating the quasi-steady state population densities of excited states of hydrogen-like ions. G.J. Tallents — AAID 12 (1976) 205
AATWAB (Fortran, 2046). A program to calculate coronal emission line strengths. P.L. Dufton — ACXE 13 (1977) 25
TRIP 1 (Fortran, 1412). TRIP 1: a time-dependent recombination ionisation package. J. Magill. Subroutine required: ABUF (§4.14) or ABUJ (§4.14) or ABUK (§4.14) — ABUV 16 (1978) 129
REACS (Fortran, 923). Numerical modelling of a chemical plasma. I. REACS: a program to generate all reactions which take place in a plasma of given chemical content. S.A. Roberts. Subroutine required (for data): ACZF (§16.8) — ACZD 18 (1979) 353
PLASKEM (Fortran, 1789). Numerical modelling of a chemical plasma. II. PLASKEM: a program to predict the variation with time of the number densities of chemical species within a plasma. S.A. Roberts. Subroutines required (for data): ACWX (§15), ACZD (§19.1), ACZF (§16.8) — ACZE 18 (1979) 363
MFP (Fortran, 1477). MFP: a code for calculating equation of state and optical data for noble gases. R.R. Peterson, G.A. Moses — ABVK 20 (1980) 353

Plasma physics — *Atomic and molecular processes (continued)*

COLRAD (Fortran, 5417). COLRAD: a program to calculate population densities of the excited atomic levels of hydrogen-like ions in a plasma. N.N. Ljepojevic, R.J. Hutcheon, J. Payne AATR 44 (1987) 157
POS (Fortran, 3141). POS – A 1d time-dependent H+ ion source code. A.H. Glasser, K. Smith ABJU 55 (1989) 409
IONMIX (Fortran, 5027). IONMIX: a code for computing the equation of state and radiative properties of LTE and non-LTE plasmas. J.J. MacFarlane ABJT 56 (1989) 259

19.2. Beams

No programs classified under this heading yet.

19.3. Collisionless plasmas

DELSQPHI (Fortran, 1630). DELSQPHI, a two-dimensional Poisson-solver program. J.P. Christiansen, R.W. Hockney. Subroutine required: ABUA (§4.6) ABUB 2 (1971) 139
DELSQRZ (Fortran, 1131). Solution of Poisson's equation in cylindrical coordinates. M.H. Hughes. Subroutine required: ABUA (§4.6) ABUC 2 (1971) 157
AXISYMM-SCALAR-HELMHOLTZ-FINTEL4 (Fortran, 3638). A finite element program package for axisymmetric scalar field problems. A. Konrad, P. Silvester. Subroutine required: ACSD (§19.3). Other version: ACSC (§19.3) ACSB 5 (1973) 437
AXISYMM-SCALAR-HELMHOLTZ-FINTEL6 (Fortran, 4188). A finite element program package for axisymmetric scalar field problems. A. Konrad, P. Silvester. Subroutine required: ACSD (§19.3). Other version: ACSB (§19.3) ACSC 5 (1973) 438
GENERATE (Fortran, 760). A finite element program package for axisymmetric scalar field problems. A. Konrad, P. Silvester. Other version: AABL (§12) ACSD 5 (1973) 438
WATER BAG MODEL (Fortran, 1056). A numerical code for multiple water bag gravitational systems. S. Cuperman, A. Harten ACRU 8 (1974) 307
AXISYMM-VECTOR-HELMHOLTZ-FINTEL6 (Fortran, 4463). A finite element program package for axisymmetric vector field problems. A. Konrad, P. Silvester. Subroutines required: ACSC (§19.3), ACSD (§19.3), ACSF (§19.3) ACSE 9 (1975) 193
VECTR-FINTEL6-BLK-DATA-GENERATOR (Fortran, 1629). A finite element program package for axisymmetric vector field problems. A. Konrad, P. Silvester ACSF 9 (1975) 194
P3M3DP (Fortran, 7964). P3M3DP: the three dimensional periodic particle-particle/particle-mesh program. J.W. Eastwood, R.W. Hockney, D.N. Lawrence. Subroutines required: ABUF (§4.14) or ABUJ (§4.14) or ABUK (§4.14), ABUA (§4.6) ABVA 19 (1980) 215
PHASE SPACE BOUNDARY INTEGRATION (Fortran, 1454). A numerical code for the phase-space boundary integration of water bag plasmas. S. Cuperman, M. Mond ABVU 21 (1981) 397
SHRD (Fortran, 702). Integration of Vlasov equation by quantum mechanical formalism. V.T. Nguyen, P. Bertrand, B. Izrar, E. Fijalkow, M.R. Feix ACCY 34 (1985) 295
TAYLOR-CHIRIKOV MAP PACKAGE (Fortran, 1260). Taylor-Chirikov map package: a package of programs for the calculation of ordered periodic orbits of area preserving twist maps. Q. Chen, B.D. Mestel ABBW 51 (1988) 463
VLFF (Fortran, 413). Integration of Vlasov equation by a fast Fourier Eulerian code. B. Izrar, A. Ghizzo, P. Bertrand, E. Fijalkow, M.R. Feix ABHD 52 (1989) 375

19.4. Data interpretation

ABEL (Fortran, 437). Inversion of Abel's integral equation -application to plasma spectroscopy. C. Fleurier, J. Chapelle AAAC 7 (1974) 200
ABEL (Fortran, 174). Inversion of Abel's integral equation by a direct method. L.S. Fan, W. Squire ABSC 10 (1975) 98
AFER (Fortran, 914). Calculation of the energy response of a spectrometer. J. Lotrian, M. Leriche, J. Cariou ACXA 12 (1976) 231
ABEL (Fortran, 1615). ABEL: stable, high accuracy program for the inversion of Abel's integral equation. I. Beniaminy, M. Deutsch AAOK 27 (1982) 415

19.5. Discharges

SPARK71 (Fortran, 1074). The computation of the growth of a gaseous discharge in space-charge distorted fields. A.J. Davies, C.J. Evans. Other version: ABUU (§19.5) ABUD 3 (1972) 322
DCANF (Fortran, 931). The computation of steady state arcs in nozzle flow. M.T.C. Fang, S.K. Chan, R.D. Wright ABUS 13 (1977) 363

Plasma physics — *Discharges (continued)*

SPARK2D (Fortran, 2253). Simulation of the growth of axially symmetric discharges between plane parallel electrodes. A.J. Davies, C.J. Evans, P.M. Woodison. Other version: ABUD (§19.5) ABUU 14 (1978) 287
RADFL (Fortran, 1038). Radial radiative flux in cylindrically symmetric arcs. P.J. Shayler, M.T.C. Fang ABUW 16 (1978) 139
ARCABL (Fortran, 1000). The computation of steady state arcs with mild nozzle-wall ablation. D.B. Newland, M.T.C. Fang ACEC 28 (1983) 299
SIGDCS (Fortran, 1044). Scalar DC electrical conductivity of partially ionized gases. D.A. Erwin, J.A. Kunc AALE 42 (1986) 119
SSARC (Fortran, 2607). The computation of self-similar arcs. J.F. Zhang, D.B. Newland, M.T.C. Fang ABBI 47 (1987) 267
ALACANT (Fortran, 944). Modeling of glow discharge sputtering systems: computer program. I. Abril ABFC 51 (1988) 413

19.6. Equilibrium and stability

DELSQPHI (Fortran, 1630). DELSQPHI, a two-dimensional Poisson-solver program. J.P. Christiansen, R.W. Hockney. Subroutine required: ABUA (§4.6) ABUB 2 (1971) 139
DELSQRZ (Fortran, 1131). Solution of Poisson's equation in cylindrical coordinates. M.H. Hughes. Subroutine required: ABUA (§4.6) ABUC 2 (1971) 157
THALIA (Fortran, 2636). THALIA – a one-dimensional magnetohydrodynamic stability program using the method of finite elements. K. Appert, D. Berger, R. Gruber, F. Troyon, K.V. Roberts. Subroutines required: ABUF (§4.14) or ABUJ (§4.14) or ABUK (§4.14), ACWC (§4.8) ACWB 10 (1975) 11
2LDV103 (PL/1, 1506). Linear and nonlinear ideal MHD codes – V103. H.R. Hicks, J.W. Wooten ABUQ 13 (1977) 117
N3DV103 (PL/1, 1497). Linear and nonlinear ideal MHD codes – V103. H.R. Hicks, J.W. Wooten ABUR 13 (1977) 117
Other version: ABQI (§19.11) ABUT 14 (1978) 423
HYMBLO (Fortran, 978). HYMNIABLOCK: eigenvalue solver for blocked matrices. R. Gruber ABVI 20 (1980) 421
ERATO (Fortran, 7901). ERATO stability code. R. Gruber, F. Troyon, D. Berger, L.C. Bernard, S. Rousset, R. Schreiber, W. Kerner, W. Schneider, K.V. Roberts ABVS 21 (1981) 323
RECT (Fortran, 543). Orthogonalization of discrete coordinates. C.W. Davies AAQW 23 (1981) 427
VMOMS (Fortran, 2840). VMOMS: a computer code for finding moment solutions to the Grad-Shafranov equation. L.L. Lao, R.M. Wieland, W.A. Houlberg, S.P. Hirshman ABSH 27 (1982) 129
000A CORRECTION 09/05/83 (Fortran) 30 (1983) 107
MAGCFA (Fortran, 2305). Numerical evaluation of magnetic coordinates for toroidal magnetic confinement devices. G. Kuo-Petravic ACCO 33 (1984) 353
ODRIC (Fortran, 9719). ODRIC: a one-dimensional linear resistive MHD code in cylindrical geometry. A.A. Mirin, R.J. Bonugli, N.J. O'Neill, J. Killeen AAFZ 41 (1986) 85
EIV (Fortran, 9469). EIV: axisymmetric plasma equilibrium code. D.E. Shumaker AATQ 44 (1987) 177

19.7. Inertial confinement

MEDUSA (Fortran, 6316). MEDUSA – a one-dimensional laser fusion code. J.P. Christiansen, D.E.T.F. Ashby, K.V. Roberts. Subroutine required: ABUF (§4.14) or ABUJ (§4.14) or ABUK (§4.14) ABUG 7 (1974) 271
000A CORRECTION 15/8/75 (Fortran) 10 (1975) 251
RAMSES (Fortran, 3798). RAMSES: a two-dimensional, PIC type laser pulse propagation code. H.D. Dudder, D.B. Henderson. Subroutine required: ABUF (§4.14) or ABUJ (§4.14) or ABUK (§4.14) ABUL 10 (1975) 155
CASTOR 2 (Fortran, 13600). CASTOR 2: a two-dimensional laser target code. J.P. Christiansen, N.K. Winsor. Subroutines required: ABUF (§4.14) or ABUJ (§4.14) or ABUK (§4.14), ABUV (§19.1) ABUY 17 (1979) 397
000A CORRECTION 10/03/81 (Fortran) 23 (1981) 109
HEATER (Fortran, 602). HEATER: a 2D laser propagation subroutine for underdense plasmas. J.N. McMullin, C.E. Capjack, C.R. James ABSG 23 (1981) 31
FIRE (Fortran, 6071). FIRE: a code for computing the response of an inertial confinement fusion cavity gas to a target explosion. T.J. McCarville, R.R. Peterson, G.A. Moses. Subroutine required (for data): AAHO (§19.7) AAHP 28 (1983) 367
MIXERG (Fortran, 2509). MIXERG: an equation of state and opacity computer code. R.R. Peterson, G.A. Moses AAHO 28 (1983) 405
MF-FIRE (Fortran, 9545). MF-FIRE: a multifrequency radiative transfer hydrodynamics code. G.A. Moses, R.R. Peterson, T.J. McCarville. Subroutine required: AAHO (§19.7) ACDV 36 (1985) 249
MULTI (Fortran, 14231). MULTI: a computer code for one-dimensional multigroup radiation hydrodynamics. R. Ramis, R. Schmalz, J. Meyer-ter-Vehn ABBV 49 (1988) 475

Plasma physics *(continued)*

19.8. Kinetic models

FIFPC (Fortran, 3936). FIFPC: a fast ion Fokker-Planck code. R.H. Fowler, J. Smith, J.A. Rome — ABSD 13 (1977) 323
Other version: ABFI (§19.8) — AAQU 24 (1981) 37
Other version: ABFI (§19.8) — AAQV 24 (1981) 37
SIGV5D (Fortran, 731). SIGV5D, a routine to compute the reaction rates of interacting distribution functions. A.A. Mirin, M.G. McCoy — ABFG 51 (1988) 369
FPPAC88 (Fortran, 7268). FPPAC88: a two-dimensional multispecies nonlinear Fokker-Planck package. A.A. Mirin, M.G. McCoy, G.P. Tomaschke, J. Killeen. Other versions: AAQU (§19.8), AAQV (§19.8) — ABFI 51 (1988) 373
ELENDIF77 (Fortran, 3596). ELENDIF: a time-dependent Boltzmann solver for partially ionized plasmas. W.L. Morgan, B.M. Penetrante — ABLX 58 (1990) 127

19.9. Magnetic confinement

GLOWCODE (Fortran, 2489). GLOWCODE: a one-dimensional code for the simulation of plasma afterglows. J.W. Long, A.A. Newton, M.C. Sexton. Subroutine required: ABUF (§4.14) or ABUJ (§4.14) or ABUK (§4.14) — ABUP 12 (1976) 213
BWIRE (Fortran, 633). Magnetic field, vector potential and their derivatives due to currents in closed polygons of wire. D.K. Lee — AARP 25 (1982) 181
ZEROD (Fortran, 3460). ZEROD: a computer model for plasma-circuit coupling. J.W. Long, J.W. Johnston, A.A. Newton. Subroutine required: ABUF (§4.14) or ABUJ (§4.14) or ABUK (§4.14) — ACDG 34 (1985) 231
TOPIC (Fortran, 1217). TOPIC: a tokamak plasma impurities code. T.A. Beu, F. Spineanu, M. Vlad, R.I. Campeanu, I.I. Popescu — ACDY 36 (1985) 161
TANDEM (Fortran, 1088). Magnetic configurations for axisymmetric tandem mirror devices. S. Cuperman, L. Ofman — AALK 42 (1986) 217
TUBE88 (Fortran, 14525). TUBE88, a code which computes magnetic field lines. A.A. Mirin, D.R. Martin, N.J. O'Neill — ABHJ 54 (1989) 183
CFRX (Fortran, 2626). CFRX, a one-and-a-quarter-dimensional transport code for field-reversed configuration studies. M.-Y. Hsiao, K.A. Werley, K.M. Ling — ABHZ 54 (1989) 329

19.10. Magnetohydrodynamics

ALFVEN (Fortran, 2463). ALFVEN: a two-dimensional code based on SHASTA, solving the radiative, diffusive MHD equations. W.J. Weber, J.P. Boris, J.H. Gardner — ABUX 16 (1979) 243
000A CORRECTION 26/09/80 (Fortran) — 21 (1981) 437
PLASMA (Fortran, 1072). A program to solve rotating plasma problems. M. Bakker, M.S. van den Berg — ABVE 20 (1980) 429
ILUBCG2 (Fortran, 824). ILUBCG2: a preconditioned biconjugate gradient routine for the solution of linear asymmetric matrix equations arising from 9-point discretizations. A.E. Koniges, D.V. Anderson — AALX 43 (1987) 297

19.11. Transport

SOUND ABSORPTION (Fortran, 320). A program for the extraction of bulk viscosities from sound absorption data. H. Moraal — ABSA 3 (1972) 1
BOLTZ (Fortran, 2857). BOLTZ: a code to solve the transport equation for electron distributions and then calculate transport coefficients and vibrational excitation rates in gases with applied fields. R.M. Thomson, K. Smith, A.R. Davies — ACWX 11 (1976) 369
Other version: ABQI (§19.11) — ABUT 14 (1978) 423
ATHENE 1A (Fortran, 12570). ATHENE 1A: a one-dimensional fusion code. J.P. Christiansen, K.V. Roberts, V.A. Piotrowicz, J.W. Long, J.W. Johnston, A.A. Newton. Subroutine required: ABUF (§4.14) or ABUJ (§4.14) or ABUK (§4.14). Other version: ABUT (§19.11) — ABQI 23 (1981) 63
SEURAT (Fortran, 3630). SEURAT: a Monte Carlo algorithm for calculating neutral gas transport in non-circular axisymmetric toroidal plasmas. D.B. Heifetz, D.E. Post — ABSI 29 (1983) 287
HPLAS (Fortran, 9383). HPLAS: multigroup cross section and reaction rate processor for coupled H, H2 and H2+ transport applications in plasmas. B.R. Wienke, J.E. Morel, T.E. Cayton, R.B. Howell — ACDA 34 (1984) 87
FD, FDG, FDH (Fortran, 2119). Generalized Fermi-Dirac integrals – FD, FDG, FDH. L.W. Fullerton, G.A. Rinker — AADU 39 (1986) 181
STRIMP (Fortran, 1218). STRIMP: program for studying the impurity evolution in tokamak plasma. F. Spineanu, M. Vlad, I.I. Popescu — AAFS 41 (1986) 155
SIGDCS (Fortran, 1044). Scalar DC electrical conductivity of partially ionized gases. D.A. Erwin, J.A. Kunc — AALE 42 (1986) 119

Plasma physics — *Transport (continued)*

BALDUR (Fortran, 45271). BALDUR: a one-dimensional plasma transport code. C.E. Singer, D.E. Post, D.R. Mikkelsen, M.H. Redi, A. McKenney, A. Silverman, F.G.P. Seidl, P.H. Rutherford, R.J. Hawryluk, W.D. Langer, L. Foote, D.B. Heifetz, W.A. Houlberg, M.H. Hughes, R.V. Jensen, G. Lister, J. Ogden ABBS 49 (1988) 399
POS (Fortran, 3141). POS – A 1d time-dependent H+ ion source code. A.H. Glasser, K. Smith ABJU 55 (1989) 409
IONMIX (Fortran, 5027). IONMIX: a code for computing the equation of state and radiative properties of LTE and non-LTE plasmas. J.J. MacFarlane ABJT 56 (1989) 259
ELENDIF77 (Fortran, 3596). ELENDIF: a time-dependent Boltzmann solver for partially ionized plasmas. W.L. Morgan, B.M. Penetrante ABLX 58 (1990) 127

19.12. Space and astrophysical plasmas

IONMIX (Fortran, 5027). IONMIX: a code for computing the equation of state and radiative properties of LTE and non-LTE plasmas. J.J. MacFarlane ABJT 56 (1989) 259

19.13. Wave-plasma interactions

DRFT (Fortran, 543). Radiation potential of a point antenna immersed in drifting cold or hot (hydrodynamical) plasma. E. Fijalkow, G. Mourgues ABUZ 18 (1979) 297
POTENT (Fortran, 433). The potential created by an alternating point charge in a Maxwellian magneto-plasma. J. Thiel, P. Dorio, C. Soubry AAQP 23 (1981) 169

19.14. General plasma physics

No programs classified under this heading yet.

20. Programming and publication practice

OLYMPUS (Fortran, 2425). OLYMPUS – a standard control and utility package for initial-value Fortran programs. J.P. Christiansen, K.V. Roberts. Other versions: ABUJ (§20), ABUK (§20) ABUF 7 (1974) 245
OLYMPUS FOR IBM 370/165 (Fortran, 2412). OLYMPUS and preprocessor package for an IBM 370/165. M.H. Hughes, K.V. Roberts, P.D. Roberts. Other versions: ABUF (§20), ABUK (§20) ABUJ 9 (1975) 51
OLYMPUS FOR CDC 6500 (Fortran, Compass, 2170). OLYMPUS control and utility package for the CDC 6500. M.H. Hughes, K.V. Roberts, G.G. Lister. Other versions: ABUF (§20), ABUJ (§20) ABUK 10 (1975) 167
COMPOS (Fortran, 5496). The OLYMPUS Fortran compositor. M.H. Hughes, K.V. Roberts. Subroutine required: ABUF (§20) or ABUJ (§20) or ABUK (§20) ACEA 29 (1983) 45
GENSIS (Fortran, 7759). The OLYMPUS Fortran generator. M.H. Hughes, K.V. Roberts. Subroutine required: ABUF (§20) or ABUJ (§20) or ABUK (§20) ACEB 29 (1983) 59

21. Radiation

21.1. Radiation physics

SYNCHROTRON RADIATION (Fortran, 321). Spectral intensity, angular distribution and polarisation of synchrotron radiation from a monoenergetic electron. J. Lang ACQR 1 (1970) 440
DOSEI (Fortran, 351). Gamma-radiation dosimetry for arbitrary source and target geometry. L.B. Hubbard ACMG 2 (1971) 449
000A CORRECTION 05/03/73 (Fortran) 5 (1973) 395
0001 DOSEI IMPROVEMENTS (Fortran, 187). First collision gamma-ray dose. L.B. Hubbard 6 (1973) 240
MCS (Fortran, 867). Monte Carlo simulation of photons in two-layered media for density gauges. E.R. Christensen AAUK 7 (1974) 185
BREMSSTRAHLUNG INTENSITY (NR) (Fortran, 301). A program for calculating the angular distribution of nonrelativistic bremsstrahlung intensity. A. Banuelos, F. Rodriguez-Trelles ACYJ 15 (1978) 125
0001 BREMSSTRAHLUNG INTENSITY 2 (Fortran, 245). Extension to high frequencies of a program for calculating the angular distribution of nonrelativistic bremsstrahlung. A. Banuelos, F. Rodriguez-Trelles, L. Bilbao 17 (1979) 305
MUONIC ATOM CASCADE (Fortran, 2760). Muonic atom cascade program. V.R. Akylas, P. Vogel AAMA 15 (1978) 291
RADFL (Fortran, 1038). Radial radiative flux in cylindrically symmetric arcs. P.J. Shayler, M.T.C. Fang ABUW 16 (1978) 139
SNEX (Fortran, 434). SNEX: semianalytic solution of the one-dimensional discrete ordinates transport equation with diamond differenced angular fluxes. B.R. Wienke AADK 38 (1985) 397

Radiation — *Radiation physics (continued)*

ESECT/EMAP (Fortran, 801). ESECT/EMAP: mapping algorithm for computing intersection volumes of overlaid meshes in cylindrical geometry. B.R. Wienke AAFD 39 (1986) 259
SYNCHR88 (Fortran, 777). Synchrotron radiation flux at experimental stations. J.S. Reid ABJB 54 (1989) 307
BREMPNT (Fortran, 323). Bremsstrahlung cross section for a point, spinless target. A. Minter, D.A. Jenkins ABRV 59 (1990) 499

21.2. Radiative transfer

ABELA (Fortran, 413). Calculation of the radial distribution of emitters in a cylindrical source. R. Piessens ABUE 5 (1973) 294
TRANSPHERE (Fortran, 1808). Numerical evaluation of the formal solution of radiative transfer problems in spherical geometries. D.G. Hummer, C.V. Kunasz, P.B. Kunasz AAAB 6 (1973) 38
SLAB3 (Fortran, 3203). Transfer of line radiation in optically thick media allowing for transport of excitation energy: the resonant doublet. C.V. Kunasz, P.B. Kunasz AAAH 10 (1975) 304
AFER (Fortran, 914). Calculation of the energy response of a spectrometer. J. Lotrian, M. Leriche, J. Cariou ACXA 12 (1976) 231
MFP (Fortran, 1477). MFP: a code for calculating equation of state and optical data for noble gases. R.R. Peterson, G.A. Moses ABVK 20 (1980) 353
PROFILE (Fortran, 1149). PROFILE: a code for evaluating line profile shapes for optically thick expanding plasmas. G.J. Tallents AARK 25 (1982) 141
Other version: ABBQ (§21.2) AAEJ 28 (1983) 337
MAXWEL (Fortran, 914). MAXWEL: exact photon cross section processor for relativistic Maxwellian electrons. B.L. Lathrop, B.R. Wienke ACCF 32 (1984) 309
SNEX (Fortran, 434). SNEX: semianalytic solution of the one-dimensional discrete ordinates transport equation with diamond differenced angular fluxes. B.R. Wienke AADK 38 (1985) 397
CSDUST3 (Fortran, 3943). CSDUST3: a radiation transport code for a dusty medium with 1-D planar, spherical or cylindrical geometry. M.P. Egan, C.M. Leung, G.F. Spagna Jr. Other version: AAEJ (§21.2) ABBQ 48 (1988) 271

22. Reactor systems

RETRANS (Fortran, 2316). RETRANS: a program for calculating reactivity transients. G. Kamelander AADB 39 (1986) 105
DENTS (Fortran, 3534). DENTS: a Fortran program for analysing continuous neutron spectra. C.A. Ciarcia, W.A. Schier, G.P. Couchell, D.J. Pullen, R.S. Tanczyn, M.H. Haghighi, Q. Sharfuddin AAFA 39 (1986) 233
GRENADE (Fortran, 2865). GRENADE: a coarse-mesh reactor physics program to solve the static diffusion equation for neutrons. T.A. Beu, D.I. Simionovici, V.N. Anghel AALJ 42 (1986) 197

23. Statistical physics and thermodynamics

ISING (Fortran, Compass, 776). A fast algorithm for investigations on the three-dimensional Ising model. See erratum Comput. Phys. Commun. 55 (1989) 251. M. Creutz, P. Mitra, K.J.M. Moriarty ACCP 33 (1984) 361
MICROIS (Fortran, 442). Fortran code for the three-dimensional Ising model. M. Creutz, K.J.M. Moriarty. Other version: AALU (§23) AADW 39 (1986) 173
ISING (Fortran, 349). Vectorization of the three-dimensional Ising model program on the CDC CYBER 205. M. Creutz, K.J.M. Moriarty, M. O'Brien. Other version: AADW (§23) AALU 42 (1986) 191
KAPPA,KP (Fortran, 1159). High temperature expansion via Schwinger-Dyson equations: the planar rotator model on a triangular lattice. P. Butera, R. Cabassi, M. Comi, G. Marchesini AATS 44 (1987) 143
GLASS (Fortran, 959). A fast vectorized program for the CDC CYBER 205 to simulate the Ising spin glass in three dimensions. G. Bhanot, R. Salvador, D. Duke, K.J.M. Moriarty ABDA 49 (1988) 465
BCC64 (Fortran, 487). Fortran code for the three-dimensional Ising model on body-centered cubic and face-centered cubic lattices. J.-M. Drouffe, K.J.M. Moriarty ABFY 52 (1989) 249
FCC64 (Fortran, 466). Fortran code for the three-dimensional Ising model on body-centered cubic and face-centered cubic lattices. J.-M. Drouffe, K.J.M. Moriarty ABFZ 52 (1989) 249
MICRO (Fortran, 763). A fast vectorized program for the Cyber 205 to calculate the partition function of the 3-D Ising model. P.A. Carter ABHR 54 (1989) 103
ISINGSIMULATOR (Fortran, 1009). A fast vectorized Fortran 77 program for the Monte Carlo simulation of the three dimensional Ising system. H.-O. Heuer ABRG 58 (1990) 387

Computer Physics Communications Program Library

This international physics program library was set up at the Queen's University of Belfast in 1969 with the aid of a grant from the Science and Engineering Research Council, England. A description of the CPC Program Library Services is given in Comput. Phys. Commun. 42 (1986) xxv–xxvii.

The library contains all the programs whose descriptions are published in Computer Physics Communications.

Services offered

- A subscription scheme designed for laboratories and institutes that wish to receive regularly all programs contributed to the library.
- A service to scientists who require particular programs relevant to their research.
- An electronic mail information service.

Distribution

The program decks, including data for the test run, are distributed to a subscriber or to an individual as 80 character lines on half-inch 9-track magnetic tape in a tape code specified by the customer on a standard form. Individual programs can be supplied on floppy disc, by electronic mail, or as listings if specially requested. Order forms are printed on the following pages.

Subscriptions

The subscription scheme was started in 1970 and is organised on a per volume basis. A volume contains at least 80000 lines. So far 50 volumes have been distributed to subscribers and volumes 51, 52, 53 and 54 are announced for 1992.

Individual requests

One or several programs can be requested from the library. Every effort is made to provide a rapid service and all program copies are despatched by air-mail or by electronic mail.

Service charges

The library is self-supporting but not profit-making, and a charge is made for library services. The charges are given in the order forms.

Licensed programs

Persons ordering licensed programs should mail one signed copy of a program licence for that program to CPC with their program order (a blank licence which may be photocopied for such use is printed hereafter). If your institution requires a countersigned file copy of the licence for software files please indicate this on the form and a countersigned copy will be sent by return post. Subscribers to the whole library simply sign one copy as part of the subscription process.

Electronic mail information service

The current program index, either complete or specified sections and author indexes are available by electronic mail. Information on the service and a list of commands are obtained by sending the message: GET CPC INTRO CPCINDEX to (JANET) LISTRAL@UK.AC.RL.IB or (EARN/BITNET) LISTRAL@UKACRL or LISTRAL@EARN-RELAY.AC.UK

Information

The library is well established and considerable experience has been accumulated in distributing programs to major computing installations all over the world. There are over 1200 programs in the library in most areas of physics. A program index is available and can be obtained on request. It will also be published in a forthcomming issue of Computer Physics Communications.

Further information on the services is available from:

Miss C. Jackson
CPC Program Library
Department of Applied Mathematics and Theoretical Physics
The Queen's University of Belfast
Belfast BT7 1NN
Northern Ireland
Electronic mail address: JANET CPC@UK.AC.QUB.AMV1
EARN/BITNET CPC@AMV1.QUB.AC.UK or
CPC%UK.AC.QUB.AMV1@UKACRL.BITNET

Standard CPC non-profit use licence *

Name of program:

Catalogue number:

Conditions of licence:

1. This licence entitles the licensee (one person) and his/her research group to use the program and share the source or executable code for academic or non-profit use within a research group or it entitles the licensee (one company, organization, or computing center) to install the program and allow access to the executable code to any number of users for academic or non-profit use. For programs covered by this licence, no users or site will redistribute the source code or executable code to a third party in original or modified form without written permission of the author.

2. Publications resulting from using this program will reference the article describing the program in Computer Physics Communications.

3. This licence does not allow any commercial (profit-making or proprietary) use or relicensing or redistributions. Persons interested in for-profit use should contact the author directly.

Name and address of licensee (personal user, research group leader, company, organization, or computing centre):

On behalf of myself or the above licensee, I agree to the conditions listed above for this licence.

Signed for licensee:

Print or type name of person signing:

Date:

☐ Users requiring a countersigned copy of this licence should check this box and CPC Program Library will countersign and date the agreement below.

* To be completed when stated in the Program Summary.

1992

Application for a subscription to the CPC Program Library

Volumes 51, 52, 53 and 54

Please refer to the previous page for a short description of the library and services. Please indicate if back volumes are also required.

Name of person to whom the tapes should be sent:
Name of institute:
Address:

Type of computer:

Magnetic tape specifications

The library programs will be sent as 80 character lines on half-inch, 9-track magnetic tape without a header label. Please indicate the mode in which the tape should be written. Please specify the requirements if the alternatives given are impossible.

Density: 1600 characters per inch □ 6250 characters per inch □

Number of lines per block (block length = $80n$ characters, $n \leq 48$):

Character code

The most common code on 9-track tape is EBCDIC. If this is unsuitable please define the code required.

Subscription charge

In 1992 the subscription is £240 per volume plus the cost of a tape and its postage.

All back volumes 1–50, can be obtained at the special price of £2100. Magnetic tapes and their postage are charged extra. The volumes are combined and distributed on a minimum number of 2400 ft. magnetic tapes.

Neither the Library nor the Author of any distributed program guarantees that it is free from error or meets its published specification and cannot be responsible for any loss or consequential damage as a result of using it.

The subscriber is asked to limit the distribution of programs in the Library to authorized users of the facilities provided by his institution.

Name of person authorising the subscription:
Address:

Signature: Date:

Please return to:
Miss C. Jackson, CPC Program Library, Department of Applied Mathematics,
The Queen's University of Belfast, Belfast BT7 1NN, Northern Ireland.

CPC Program Library – individual request order form

Please list the program(s) required. Kindly check whether any program calls other CPC Library subprograms since these should also be listed.
Catalogue number: Title: No. of lines:

Type of computer to be used: Total no. of lines:

Magnetic tape specifications

The library programs will be sent as 80 character lines on half-inch, 9-track magnetic tape without a header label. Please indicate the mode in which the tape should be written. Please specify the requirements if the alternatives given are impossible.

Density: 1600 characters per inch □ 6250 characters per inch □

Number of lines per block (block length = $80n$ characters, $n \leq 48$):
Character code: The most common code on 9-track tape is EBCDIC. If this is unsuitable please define the code required.

Floppy disc

3.5 inch and 5.25 inch discs written using DOS software can be supplied. Please specify requirements.

Charge

In 1992 this is £16 per 1000 lines plus a basic charge of £25. For large orders distributed on high density magnetic tape the charge is £105 for the first 5000 lines and £15 per 5000 lines for the rest. This includes the cost of a tape (maximum length 600 ft. (180 m)) or floppy disc, handling and air-mail postage.

Electronic mail

The programs can be sent by electronic mail. If you require this service please give the network, network address and user identity. In 1992, the charge is £17 plus £16 per 1000 lines.

Program listings

If none of the above is suitable listings can be supplied. In 1992, the charge is £17 plus £2 per 1000 lines plus postage.

Method of ordering

If an official order from the requestor's institute is also enclosed the order will be dispatched immediately. Otherwise a proforma invoice will be issued and the programs dispatched when it is returned with the remittance. All payments should be made in sterling.

Neither the Library nor the Author of any distributed program guarantees that it is free from error or meets its published specification and cannot be responsible for any loss or consequential damage as a result of using it.

The requestor is asked to limit the distribution of program(s) to members of his group.

Signature: Date:
Name:
Address:

Please return to:
Miss C. Jackson, CPC Program Library, Department of Applied Mathematics,
The Queen's University of Belfast, Belfast BT7 1NN, Northern Ireland.

Program classification

The programs in the library are classified under the following headings:

1. Astronomy and astrophysics
1.1 Cosmic rays
1.2 Nuclear processes
1.3 Radiative transfer
1.4 Radio astronomy
1.5 Relativity and gravitation
1.6 Solar physics
1.7 Stars and stellar systems
1.8 Interstellar medium

2. Atomic physics
2.1 Structure and properties
2.2 Spectra
2.3 Experimental analysis
2.4 Electron scattering
2.5 Photon interactions
2.6 Other collision processes
2.7 Wave functions and integrals
2.8 Exotic atoms
2.9 Theoretical methods

3. Biology

4. Computational methods
4.1 Angular momentum coupling coefficients
4.2 Other algebras and groups
4.3 Differential equations
4.4 Feynman diagrams
4.5 Coulomb functions
4.6 Fourier transforms
4.7 Other functions
4.8 Matrices
4.9 Minimization and fitting
4.10 Interpolation
4.11 Quadratures
4.12 Other numerical methods
4.13 Statistical methods
4.14 Utility

5. Computer algebra

6. Computer languages, hardware and software
6.1 Hardware
6.2 Languages
6.3 Networks
6.4 Neural networks
6.5 Software

7. Condensed matter and surface science
7.1 Defects
7.2 Electron spectroscopies
7.3 Electronic structure
7.4 Experimental analysis
7.5 Mossbauer spectra (see 17.3)
7.6 Neutron scattering
7.7 Other condensed matter physics inc. simulation of liquids and solids
7.8 Structure and lattice dynamics
7.9 Transport properties
7.10 Collisions in solids

8. Crystallography

9. Data bases, data compilation & information retrieval

10. Electrostatics and electromagnetics

11. Elementary particle physics
11.1 General, high energy physics and computing
11.2 Phase space and event simulation
11.3 Cascade and shower simulation

11.4 Quantum electrodynamics (see also 4.4)
11.5 Quantum chromodynamics, lattice gauge theory
11.6 Phenomenological & empirical models and theories
11.7 Detector design and simulation
11.8 Detector control and data acquisition
11.9 Event reconstruction and data analysis (except data bases)
11.10 Accelerators and particle beams
11.11 Data structures and data base systems

12. Gases and fluids

13. Geophysics

14. Graphics

15. Laser physics

16. Molecular physics
16.1 Structure and properties
16.2 Spectra
16.3 Molecular vibrations
16.4 Experimental analysis
16.5 Electron scattering
16.6 Photon interactions
16.7 Elastic scattering and energy transfer
16.8 Rearrangement collisions, charge transfer and chemical reactions
16.9 Classical methods
16.10 Wave functions and integrals
16.11 Polymers

17. Nuclear physics
17.1 Apparatus design
17.2 Energy loss
17.3 Mossbauer spectra
17.4 Experimental analysis – general
17.5 Experimental analysis – particle detection
17.6 Experimental analysis – activity detection
17.7 Expeirmental analysis – fission, fusion, heavy-ion
17.8 Nuclear reaction – general
17.9 Optical models
17.10 Compound nucleus
17.11 Direct reactions
17.12 Pre-equilibrium decay
17.13 Coulomb excitation, electron scattering
17.14 Medium energy reactions
17.15 Spectroscopy – level scheme
17.16 Theoretical methods – general
17.17 Oscillator brackets
17.18 Coefficients of fractional parentage – SU(3)
17.19 Shell model – one-body problem, spectra
17.20 Collective model
17.21 Cluster model
17.22 Hartree–Fock calculations

18. Optics

19. Plasma physics
19.1 Atomic and molecular processes
19.2 Beams
19.3 Collisionless plasmas
19.4 Data interpretation
19.5 Discharges
19.6 Equilibrium and stability
19.7 Inertial confinement
19.8 Kinetic models
19.9 Magnetic confinement
19.10 Magnetohydrodynamics
19.11 Transport
19.12 Space and astrophysical plasmas
19.13 Wave–plasma interactions
19.14 General plasma physics

20. Programming and publication practice

21. Radiation
21.1 Radiation physics
21.2 Radiative transfer

22. Reactor systems

23. Statistical physics & thermodynamics

The current index or sections of the index are available from the Library. Sections can also be sent by electronic mail.

1992
PHYSICS and MATERIALS SCIENCE JOURNALS
(Imprint North-Holland)

Applied Surface Science
Volumes 55-62 in 32 issues. Price: US $ 1370.00 / Dfl. 2768.00

Chemical Physics
Volumes 158-166 in 27 issues. Price: US $ 1840.00 / Dfl. 3717.00

Chemical Physics Letters
Volumes 186-197 in 72 issues. Price: US $ 3012.00 / Dfl. 6084.00

Computer Physics Communications
Volumes 66-71 in 18 issues. Price: US $ 1562.00 / Dfl. 3156.00

Fluid Dynamics Research
Volume 10 in 6 issues. Price: US $ 243.00 / Dfl. 491.00

Journal of Crystal Growth
Volumes 114-123 in 40 issues. Price: US $ 3545.00 / Dfl. 7160.00

Journal of Geometry and Physics
Volumes 9 and 10 in 8 issues. Price: US $278.00/Dfl.562.00

Journal of Luminescence
Volumes 52-54 in 18 issues. Price: US $ 648.00 / Dfl. 1308.00

Journal of Magnetism and Magnetic Materials
Volumes 103-113 in 33 issues. Price: US $ 2456.00 / Dfl. 4961.00

Journal of Non-Crystalline Solids
Volumes 137-148 in 36 issues. Price: US $ 2352.00 / Dfl. 4752.00

Journal of Nuclear Materials
Volumes 185-194 in 30 issues. Price: US $ 2233.00 / Dfl. 4510.00

Materials Letters
Volumes 12-14 in 18 issues. Price: US $ 544.00 / Dfl. 1098.00

Materials Science Reports
Volumes 8 and 9 in 16 issues. Price: US $ 352.00 / Dfl. 712.00

Nuclear Instruments and Methods in Physics Research - Section A
Accelerators, Spectrometers, Detectors & Associated Equipment
Volumes 310-322 in 39 issues. Price: US $ 3900.00 / Dfl. 7878.00

Nuclear Instruments and Methods in Physics Research - Section B
Beam Interactions with Materials and Atoms
Volumes 62-71 in 40 issues. Price: US $ 3000.00 / Dfl. 6060.00
Reduced combined 1992 subscription price to Nuclear Instruments and Methods - A and B: US $ 6331.00 / Dfl. 12,788.00

Nuclear Physics A
Volumes 536-550 in 60 issues. Price: US $ 3832.00 / Dfl. 7740.00

Nuclear Physics B
Volumes 366-386 in 63 issues. Price: US $ 5364.00 / Dfl. 10,836.00
Reduced combined 1992 subscription price to Nuclear Physics A+B: US $ 6985.00 / Dfl. 14,110.00

Nuclear Physics B - Proceedings Supplements
Volumes 24-28 in 10 issues Price: US $ 658.00 / Dfl. 1355.00
Reduced 1992 subscription price if combined with Nuclear Physics B or Nuclear Physics A and B: US $ 547.00 / Dfl. 1105.00

Optical Materials
Volume 1 in 4 issues. Price: US $ 164.00 / Dfl. 331.00

Optics Communications
Volumes 86-93 in 48 issues. Price: US $ 1489.00 / Dfl. 3008.00

Physica A - Statistical and Theoretical Physics
Volumes 180-189 in 40 issues. Price US $ 1837.00 / Dfl. 3710.00

Physica B - Condensed Matter Physics
Volumes 175-182 in 32 issues. Price: US $ 1469.00 / Dfl. 2968.00

Physica C - Superconductivity
Volumes 185-201 in 68 issues. Price: US $ 3122.00 / Dfl. 6307.00

Physica D - Nonlinear Phenomena
Volumes 53-60 in 18 issues. Price: US $ 1496.00 / Dfl. 2968.00

Reduced rates are available for combined subscriptions to Physica; please contact the publisher for details.

Physics Letters A
Volumes 160-171 in 72 issues. Price: US $ 1848.00 / Dfl. 3732.00

Physics Letters B
Volumes 272-293 in 88 issues. Price US $ 3387.00 / Dfl. 6842.00

Physics Reports
(including Computer Physics Reports)
Volumes 215-227 in 78 issues. Price: US $ 2001.00 / Dfl. 4043.00
Reduced combined 1992 subscription price to Physics Letters A, Physics Letters B & Physics Reports: US $ 6305.00 / Dfl. 12,737.00

Solar Energy Materials and Solar Cells
Volumes 25-27 in 12 issues. Price: US $ 447.00 / Dfl. 903.00

Solid State Ionics
Volumes 51-58 in 32 issues. Price: US $ 1202.00 / Dfl. 2528.00

Surface Science
(including Surface Science Letters)
Volumes 258-275 in 54 issues. Price: US $ 4019.00 / Dfl. 8118.00

Surface Science Reports
Volume 15 in 8 issues. Price: US $ 171.00 / Dfl. 346.00
Reduced combined 1992 subscription price to Surface Science (including Surface Science Letters), Applied Surface Science and Surface Science Reports: US $ 5093.00 / Dfl. 10,287.00

Ultramicroscopy
Volumes 42-46 in 20 issues. Price: US $ 894.00 / Dfl. 1805.00

The Dutch Guilder price (Dfl.) is definitive. The US $ price is for your guidance only as same is subject to exchange rate fluctuations. Subscribers in Japan should add 25% surcharge on the postage, packing and handling charges for SAL delivery of issues. Journals are sent by Surface Mail to all countries except to the following where Air Delivery via SAL mail is ensured at no extra cost to the subscriber: Argentina, Australia/New Zealand, Brazil, Hong Kong, India, Israel, Malaysia, Mexico, Pakistan, P.R. China, Singapore, S. Africa, S. Korea, Taiwan, Thailand, USA & Canada. The quoted prices are excluding 6% BTW for subscribers in The Netherlands.

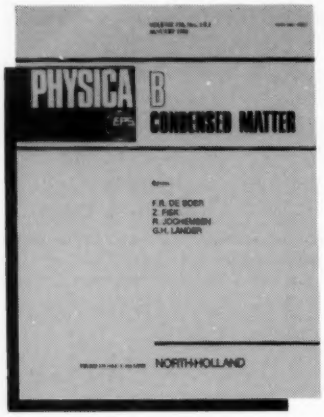
ELSEVIER SCIENCE PUBLISHERS

P.O. Box 103, 1000 AC Amsterdam, The Netherlands

Elsevier Science Publishers, Journal Information Center, PO Box 882, Madison Square Station, New York, NY 10159, U.S.A.

404/j/jnls.chp

2 INDISPENSABLE INFORMATION SUPERCURRENTS



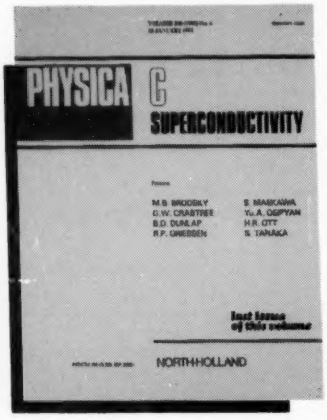
PHYSICA B - Condensed Matter

Editors:

U.S.A.: **Z. Fisk**, Los Alamos, NM
R.O.W.: **F.R. de Boer**, Amsterdam, The Netherlands
R. Jochemsen, Leiden, The Netherlands
G.H. Lander, Karlsruhe, Germany

PHYSICA B publishes papers and review articles in the realm of physics of condensed matter. Both experimental and theoretical contributions are invited, although theoretical papers should preferably be related to experimental results. In addition, PHYSICA B has published and will present the following top-level conference proceedings:

Valence Fluctuations, Rio de Janeiro, Brazil, July 1990;
Low Temperature Physics (LT 19), Brighton, United Kingdom, August 1990;
Hydrogen in Semiconductors, Trieste, Italy, August 1990;
Methods of Analysis & Interpretation of Neutron Reflectivity Data, Argonne, IL, U.S.A., August 1990;
Neutron Scattering, Bombay, India, January 1991;
Analogies in Optics and Microelectronics, Eindhoven, The Netherlands, May 1991;
Superfluid 3He in Rotation, Helsinki, Finland, June 1991;
Neutron Scattering, Oxford, United Kingdom, August 1991;
Research in High Magnetic Fields, Amsterdam, The Netherlands, August 1991;
Applications of High Magnetic Fields in Semiconductor Physics, Chiba, Japan, August 1992;
Low Temperature Physics (LT 20), Eugene, OR, U.S.A., August 1993



PHYSICA C - Superconductivity

Editors:

U.S.A.: **M.B. Brodsky**, Argonne, IL
G.W. Crabtree, Argonne, IL
B.D. Dunlap, Argonne, IL
R.O.W.: **R.P. Griessen**, Amsterdam, The Netherlands
S. Maekawa, Nagoya, Japan
Yu. A. Osipyan, Chernogolovka, Russia
H.R. Ott, Zurich, Switzerland
S. Tanaka, Tokyo, Japan

PHYSICA C serves as an exclusive, rapid channel (*publication within six to ten weeks is guaranteed*) for articles on superconductivity and related subjects. This includes theoretical papers on the fundamental issues raised by high-Tc superconductivity, reports on measurements of a wide variety of physical properties of high-Tc superconductors, on new materials and new preparation techniques, on thin-film and device-oriented work and on theoretical results pertinent to such experiments. New results in the traditional areas of superconductivity as well as on novel phenomena will also be included.

In addition to regular articles, the **Interlaken**-, the **Stanford**- and the **Kanazawa**-proceedings have been published in PHYSICA C.

Please contact the Publisher at the address mentioned below for your complimentary sample copy of PHYSICA B or PHYSICA C.

North-Holland
(Elsevier Science Publishers)
P.O.Box 103
1000 AC Amsterdam
The Netherlands
Fax: +31 (20) 58.62.580

In the U.S.A./Canada:
Elsevier Science Publishing Co., Inc.
Journal Information Center
P.O.Box 882, Madison Square Station
New York, NY 10159-2101
Fax: (212) 633.3990

COMPUTER PHYSICS COMMUNICATIONS INSTRUCTIONS TO AUTHORS * (ABBREVIATED VERSION)

Two classes of papers are published by Computer Physics Communications:

(i) Papers in the general area of computational physics and physical chemistry including research papers, notes, conference proceedings, review papers and feature articles.

(ii) Write-ups describing programs to be held in the CPC Program Library † together with descriptions of new versions of existing programs and erratum notices.

Upon acceptance of an article, the author(s) will be asked to transfer copyright of the article to the publisher. This transfer will ensure the widest possible dissemination of information.

Computational physics papers

Papers for inclusion in CPC should not primarily be concerned with theoretical or experimental physics or with mathematics, computer science or information engineering but should be specifically relevant to computational physics and physical chemistry or to the computing needs of the physics and physical chemistry communities. Subject to this criterion CPC will publish descriptions of:

Numerical, computational and programming methods.
Software, hardware and network techniques and facilities.
Mathematical, graphical and other subroutine libraries used in physics and physical chemistry.
Programs in a particular field of physics or physical chemistry.
Methods or programs associated with the design, running or analysis of experiments.
Languages and system programs of particular importance to physicists or physical chemists,

together with comments on manufacturers' hardware and software and on previous publications in CPC.

Computer programs in physics

The programs described should be of use to other physicists and physical chemists or illustrate new programming techniques which are of importance to some branch of computational physics or physical chemistry. Since they are intended for general application within the physics or physical chemistry communities they should be well structured and should meet accepted scientific programming standards. They should be written either in USANSI Fortran 77, Algol 60, Pascal, C, or in some other language which has been adequately standardized and described in the literature and whose compiler is sufficiently widely available. Dialect statements and system or library subroutines which are restricted to a particular manufacturer or installation should be avoided if possible, or explained clearly.

Submission of manuscripts

All papers, program write-ups and erratum notices should be sent in *triplicate* to a Specialist Editor in the appropriate field. All manuscripts must be in English and should be typewritten double-spaced with wide margins on good quality A4 or $8\frac{1}{2}\times 11$ in.^{2} (21.6×28 cm^2) paper. Figures must be suitable for direct photographic reproduction. Sections should be decimally numbered, and references indicated in the text consecutively by Arabic numerals in square brackets.

Programs

Usually, the manuscript for a program consists of the following:

(i) Abstract.
(ii) Program Summary *.
(iii) Long Write-up – a detailed description of the program: problem, method of solution, program design (with a flow diagram), operating instructions, input data, output (including error diagnostics), and the input data and selected output of up to three test runs. References should include a definition of the programming language if other than, Fortran 77, Algol 60, Pascal or C,

together with one copy each of:

(iv) Program Listings – the complete output from a compile–load–go job which adequately tests the program by means of up to three test runs. Not more than three pages of selected test results should be indicated for photographic reproduction in the journal to provide a check for the user and the printing should be clear enough to allow good reproduction. The complete program file should include source code job control instructions, and test data and optionally documentation and/or one or more output lists. The preferred format has 80-character lines with column 73–80 reserved for line numbering. If the author does not have a line numbering scheme, these columns may be left blank and the program librarian will provide line numbers. After acceptance for publication the author will be asked to send this program file to the CPC Program Library.

(v) Test Run Output – separate copies of the test results in a form suitable for direct reproduction in the journal or tables against which the output may be checked. Photographs of output from a high-quality printer or terminal are preferred.

(vi) In exceptional circumstances, i.e. for very large program packages, a program manual which readers may order from the CPC Program Library in hard-copy format. However, it is usually more convenient if additional documentation describing the program is given in machine-readable form as part of the program!

New versions

The manuscript to describe briefly a new version of a published program consists of:

(i) Abstract.
(ii) New Version Summary *.
(iii) Long Write-up,

together with one copy each of:

(iv) Program Listings – see section on programs, item (iv).
(v) Test Run Output.

Erratum notices

The manuscript to describe corrections to a published computational physics paper, program write-up and/or program consists of:

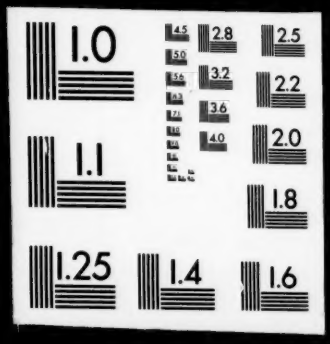
(i) Summary of the information about the original paper *.
(ii) Explanation of corrections and if the program itself has been modified: one copy each of:
(iii) Listing of the correction file – this consecutively numbered file will later be required by the Program Library and consists of "new" statements plus comments to explain, by reference to line numbers, how to modify the program file or a new copy of the program, and Program Listings – see section on programs, item (iv).
(iv) Test Run Output.

Proof correction

Corrections other than the printers' errors may be charged for.

* A more detailed version of the Instructions to Authors and Program Summary Forms are available from the Desk Editor and are printed in Comput. Phys. Commun. 62 (1991) ix–xviii.

† A description of the CPC Program Library is given in Comput. Phys. Commun. 42 (1986) xxv–xxvii. A complete Index of programs is available from the CPC Program library.


1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
4.5
5.0
5.6
6.3
7.1
8.0
9.0
10.0